BlueDragon™ 7.1

Deploying CFML on ASP.NET and the Microsoft .NET Framework

NEW ATLANTA COMMUNICATIONS, LLC

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1 Introduction

BlueDragon 7.1 for the Microsoft .NET Framework (commonly referred to as BlueDragon.NET) allows CFML applications to be deployed on Windows servers running the Microsoft .NET Framework, the Microsoft IIS web server, and ASP.NET. The Microsoft .NET Framework is built-in to Windows 2008 Server, Windows Vista, and Windows 2003 Server; and, can be installed onto Windows 2000 and Windows XP.

While most web applications on .NET are built with ASP.NET and other components of the .NET framework, BlueDragon makes it possible for the .NET Framework to also process CFML applications. BlueDragon.NET is the only way to run CFML on the .NET Framework.

BlueDragon.NET is about empowering CFML to integrate with your organization's .NET development and take full advantage of the enterprise features of this strategic platform.

1.1 About This Document

This document describes how to install BlueDragon.NET and run CFML applications via the Microsoft IIS web server and the .NET framework, *without requiring the installation of proprietary Adobe ColdFusion server software.* See section 6 for details on the technical underpinnings of how BlueDragon.NET is implemented.

This document also offers a brief overview of the .NET Framework. More importantly, it explains the many benefits of .NET deployment for CFML developers. It discusses the many forms of integration that are possible between CFML pages and native .NET components, including ASP.NET pages. Section 3 discusses these many benefits, and the details and code examples of integrating CFML and ASP.NET are detailed in a separate document, *Integrating CFML with ASP.NET and the Microsoft .NET Framework.*

1.2 About CFML

ColdFusion® Markup Language (CFML) is a popular server-side markup language for building dynamic database-driven web sites. Unlike scripting-based alternatives such as ASP or PHP, CFML is based primarily on HTML-like markup tags (though CFML also contains a scripting language component). CFML is characterized by its low learning curve and ease-of-use, particularly for web developers who do not have a technical background in programming languages such as C/C++ or Java. CFML was originally developed by Allaire Corporation in the late 1990's; Allaire was acquired by Macromedia, Inc. in early 2001, which in turn was acquired by Adobe Systems Inc. in late 2005.

Over the past several years, many organizations have begun adopting standards-based application servers for their Internet and intranet web site deployments. In particular, there has been a significant migration to application servers based on the Microsoft .NET Framework. This standardization on .NET (and ASP.NET) creates a problem for organizations that have legacy applications implemented in CFML; prior to the introduction of BlueDragon these applications could only be deployed on proprietary Allaire/Macromedia ColdFusion application servers.

1.3 About BlueDragon

The core technology of BlueDragon is a CFML runtime and execution module that, in BlueDragon.NET, is implemented as a standard ASP.NET HTTPHandler. This allows the deployment of CFML pages onto the .NET framework and IIS without installing proprietary Allaire/Macromedia ColdFusion server software.

BlueDragon is highly compatible with Macromedia's ColdFusion MX 7.0 Server, with some limitations but also many enhancements. Beside those mentioned in this guide, see the *BlueDragon 7.1 CFML Compatibility Guide* and *BlueDragon 7.1 CFML Enhancements Guide* for details:

http://www.newatlanta.com/products/bluedragon/self_help/docs/index.cfm

BlueDragon is a highly optimized, high-performance CFML runtime engine. CFML pages are compiled into an internal representation that is cached in memory and executed by the BlueDragon runtime when CFML pages are requested by client browsers.

1.4 System Requirements

BlueDragon 7.1 for the Microsoft .NET Framework is supported on Windows Server 2008, Windows Vista, Windows Server 2003, and Windows XP.

BlueDragon.NET 7.1 requires the Microsoft .NET Framework version 2.0 or higher which can be installed using the Windows Update service, or may be downloaded and installed manually.

BlueDragon.NET 7.1 requires the Visual J# 2.0 Redistributable Package – Second Edition; however, if this is not present the BlueDragon installer will install it for you. If you have already installed the original Visual J# 2.0 Redistributable Package (not the Second Edition), it must be uninstalled before you install the Second Edition redistributable.

BlueDragon.NET 7.1 requires the Visual C++ 2005 SP1 Redistributable Package; however, if this is not present the BlueDragon installer will install it for you.

1.5 Technical Support

If you're having difficulty installing or using BlueDragon, visit the self-help section of the New Atlanta web site for assistance:

http://www.newatlanta.com/products/bluedragon/self_help/index.cfm

Details regarding paid support options, including online-, telephone-, and pager-based support are available from the New Atlanta web site:

http://www.newatlanta.com/biz/support/index.jsp

1.6 Other Documentation

The other relevant manuals available in the BlueDragon documentation library are:

- *Integrating CFML with ASP.NET and the Microsoft .NET Framework*

- *BlueDragon 7.1 CFML Compatibility Guide*
- *BlueDragon 7.1 CFML Enhancements Guide*
- *BlueDragon 7.1 User Guide*

Each of these documents offers useful information that may be relevant to developers, installers, and administrators using BlueDragon.NET. These are offered in PDF format in the `docs` directory where BlueDragon is installed (as discussed in section 2.1.4).

All BlueDragon documents are available from New Atlanta's web site:

`http://www.newatlanta.com/products/bluedragon/self_help/docs/index.cfm`

2 Getting Started with BlueDragon.NET

This quick start chapter covers the minimum information needed to get started with deployment of CFML on Microsoft .NET, including Windows 2000, Windows XP, Windows Server 2003, Windows Vista, and Windows Server 2008.

While the simplest approach will have you running your CFML on .NET in just minutes, with Microsoft IIS serving your CFML in a familiar way, there are some new concepts and capabilities that will differ from your experience with traditional standalone CFML servers (like BlueDragon Server JX and ColdFusion Server). The remainder of this document explains those matters in further detail.

2.1 Prior to Installing BlueDragon

Some installations of *BlueDragon for the Microsoft .NET Framework* may experience challenges due to configuration issues in the Windows environment. The following sections offer guidance to anticipate and/or resolve such issues.

2.1.1 Ensure ASP.NET Pages Can Run

Before installing *BlueDragon for the Microsoft .NET Framework*, you should make sure that the server has been set up to run ASP.NET pages. This means that both the .NET Framework must be installed and IIS must have been properly configured by the .NET Framework installation to process ASPX pages.

If the server can't run ASP.NET pages, it will not be able to run CFML pages once BlueDragon is installed, since they are executed using the same page processing "pipeline". This is discussed further in the troubleshooting section, 8.1, where a simple sample ASP.NET page is offered for testing purposes.

On Windows 2000, it is imperative that IIS be installed prior to installation of the .NET Framework (conversely, if IIS has been installed or re-installed after .NET, there is additional configuration required as discussed in section 8.1.2.1.)

2.1.2 Windows Server 2008 and Windows Vista

Before installing BlueDragon.NET on Windows Server 2008 or Windows Vista, you must first install IIS and ASP.NET. From the "Programs and Features" control panel, select the "Turn Windows features on or off" option. For Windows Vista, select the ASP.NET option as illustrated in Figure 1, below; required options to support ASP.NET will be selected automatically. For Windows Server 2008, add the "Web Server (IIS)" role, and select the ASP.NET role service as illustrated in Figure 2, below; required services to support ASP.NET will be selected automatically.

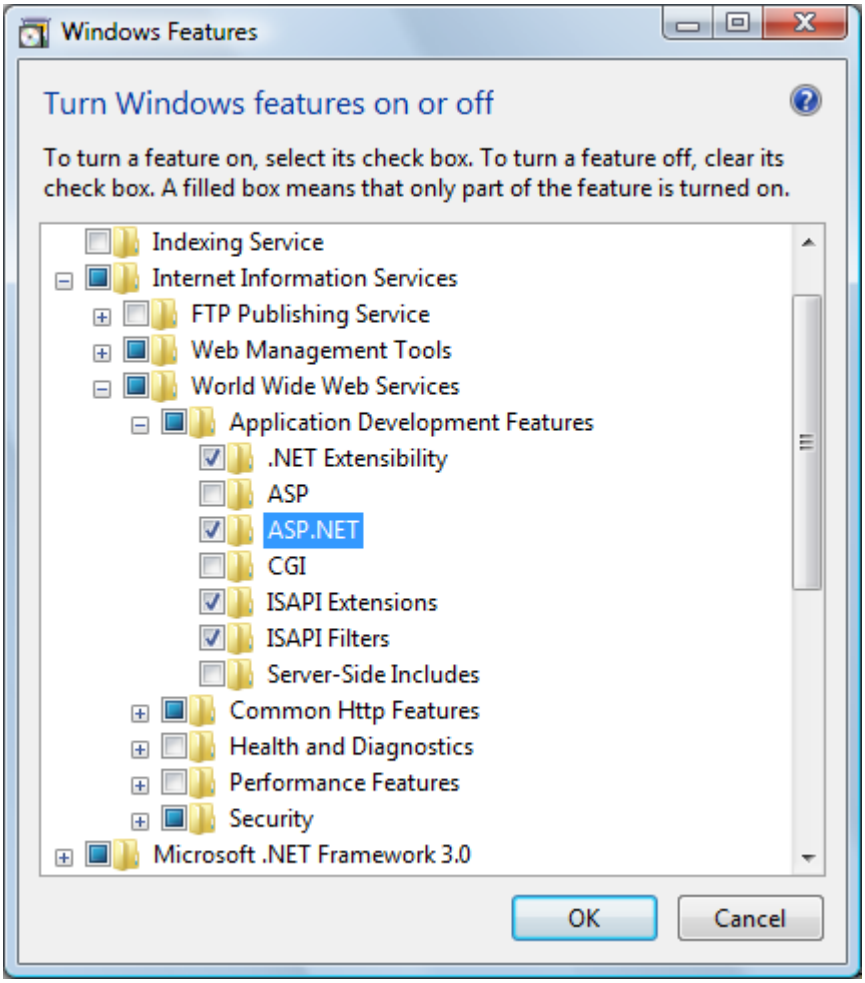


Figure 1. Installing IIS and ASP.NET on Windows Vista

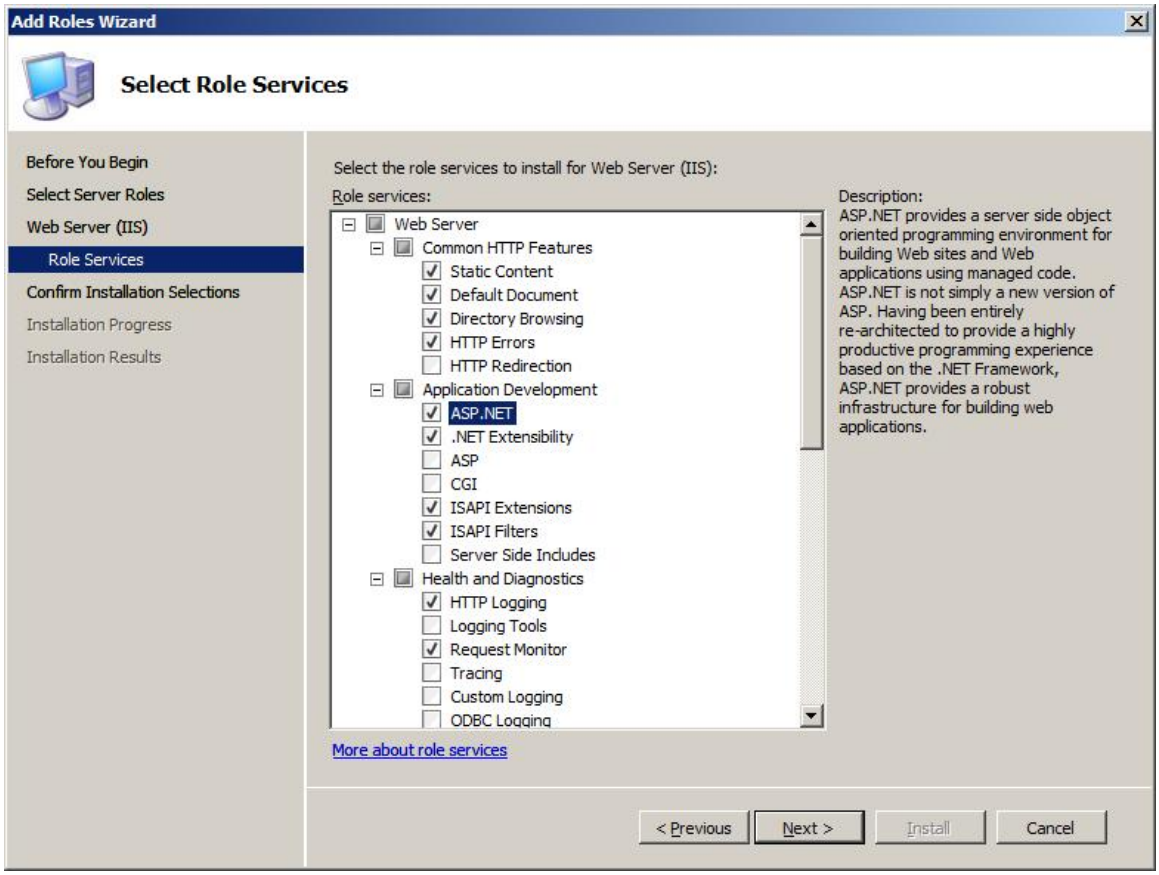


Figure 2. Installing IIS and ASP.NET on Windows Server 2008

2.1.3 Windows 2003 Security Settings

Windows Server 2003 and IIS 6 are configured by default to not permit ASP.NET pages to execute, and you must enable this feature to allow processing of CFML pages. The configuration is discussed in the following resource:

http://www.microsoft.com/technet/prodtechnol/WindowsServer2003/Library/IIS/44f16c37-f727-4244-9813-2289e13dadba.mspx

Briefly, to enable ASP.NET by using the IIS 6 version of IIS Manager:

1. In IIS Manager, expand the desired computer, and then click `Web Service Extensions`.

2. In the details pane, click `ASP.NET`, and then click `Allow`.

Additionally, recent editions of Windows Server 2003 may have enabled the “Security Configuration Wizard for Windows Server 2003”. While disabled by default, if enabled, this could be another source of security restrictions. See the following for more information:

http://www.microsoft.com/windowsserver2003/technologies/security/configwiz/default.mspx

2.1.4 Windows "Data Execution Protection" Mechanism

Editions of Windows XP SP 2 and Windows Server 2003 may enable a security feature called Data Execution Protection (or DEP). If enabled, this may prevent the BlueDragon installer from running. See the following for more information:

http://support.microsoft.com/kb/875352

2.1.5 Disable Any IIS 6 "WildCard Mapping" Enabled by CFMX

If the ColdFusion MX installer has been run to integrate with IIS 6, prior to installing BlueDragon, it will have enabled an IIS-specific feature called "wildcard mappings", which is set on the Application Configuration page where file extensions (like CFM and CFC) are defined. Depending on your CFMX installation choice, this may be configured for a single web site, all web sites, or the master properties for IIS.

You must remove this wildcard mapping if set for any web site which will be processing CFML with BlueDragon.NET, as will be discussed in section 2.2.

If the wildcard mappings setting is set in the master properties for IIS, note that it will be implemented in any future web sites you might create and you will need to remove it from them, unless you remove it from the master properties.

2.2 Installing BlueDragon for the Microsoft .NET Framework

BlueDragon for the Microsoft .NET Framework can be downloaded from the New Atlanta web site:

http://www.newatlanta.com/bluedragon/index.cfm

Offered as a free trial edition, it will work in an unrestricted fashion for 30 days, after which it will revert to a single IP developer edition that never expires (development with BlueDragon is free). When you purchase a license for BlueDragon, you can enter the license key into the BlueDragon admin console (see section 5) or manually enter it into the central bluedragon.xml configuration file (see section 5.2.3).

The BlueDragon installer will first confirm that you already have installed the .NET Framework 2.0. If not, you should use the Windows Update service to install it. Alternately, the .NET Framework can be obtained from:

http://msdn.microsoft.com/netframework/downloads/updates/

The BlueDragon installer next determines if you have installed the Visual J# .NET 2.0 Redistributable Package—Second Edition; if this is not present the BlueDragon installer will install it for you. The BlueDragon installer also determines if you have installed the Visual C++ 2005 SP1 Redistributable Package; if this is not present the BlueDragon installer will install it for you.

2.2.1 Installation Alternatives

You will next be offered a choice of four options for installing BlueDragon.NET, which will configure the Microsoft IIS web server and .NET framework to process files with the `.cfm`, `.cfml`, `.cfc` or `.cfchart` extension. You can implement BlueDragon to configure:

- All Web Sites
- Selected Web Site(s)
- Manual Configuration
- Single Virtual Directory

The first three options will implement BlueDragon in a global way so that all CFML pages in all directories and virtual directories on the selected web site(s) will be processed by BlueDragon. BlueDragon will be installed as a managed assembly that resides in the Global Assembly Cache (GAC). The BlueDragon installer also makes the XML modifications needed in the system-wide `web.config` file to extend the .NET framework to process CFML using BlueDragon. These are discussed further in Section 6. Additional support files will be placed, by default, in:

```
C:\Program Files\New Atlanta\BlueDragon.NET
```

The fourth option differs from the first three in that it will let you indicate a single virtual directory in a selected web site where BlueDragon will place all needed support files, including the `web.config`, `bin` directory, and changes in IIS will be made only for that virtual directory (no global changes will be made). You will be prompted for the directory to use or create within the selected web site. (If a `web.config` file already exists, the installer will simply update it for the needed BlueDragon entries, and if a `bin` directory already exists, the BlueDragon DLLs will simply be added to that.)

For all but the third option, BlueDragon will configure IIS so that CFML files are processed by BlueDragon by way of the .NET framework (as discussed in section 6.4). It will also prompt to indicate if these changes would overwrite any existing extension mappings for CFML-related files (`.cfm`, `.cfml`, `.cfc`, and `.cfchart`).

The third option leaves you to make the extension mapping changes manually, when desired. See section 7.2 for more information.

Depending on the installation option you choose, BlueDragon may prompt you to stop the IIS Admin service. After installation has completed, IIS will be restarted by the BlueDragon installer.

2.2.2 Upgrading or Uninstalling BlueDragon

If you wish to upgrade from BlueDragon.NET 6.2 or 7.0 to 7.1, simply run the 7.1 installer which will detect and upgrade your current 6.2 or 7.0 installation. Note, however, that it is not possible to upgrade to BlueDragon.NET 7.1 on Windows Server 2008 or Windows Vista; on these operating systems you must first uninstall the older version of BlueDragon.NET before installing 7.1.

When you uninstall BlueDragon.NET, it will preserve your previous settings, including admin console configuration and more. If you are upgrading and are concerned about protecting your files, simply make a copy of the relevant configuration and work directories (as discussed in section 5.2) before upgrading.

To uninstall BlueDragon.NET, use the Windows Control Panel feature, `Add or Remove Programs`.

2.3 Placing Your CFML within IIS Web Site(s)

Once installed, BlueDragon is configured so that IIS and the .NET Framework natively process CFML templates alongside other ASP.NET and static web resources (such as .aspx pages, HTML files, GIF/JPEG images, etc.). Simply place your CFML pages into the document root directory (for example, `C:\Inetpub\wwwroot`) or its sub-directories or a virtual directory (or the virtual directory chosen in the fourth option discussed in the previous section).

Note that the BlueDragon installer does not configure `index.cfm` as a "default document" in IIS. See section 7.4 for more information, if your application relies on URLs without filenames.

2.4 BlueDragon CFML Compatibility and Enhancements

While all BlueDragon users should become aware of the various enhancements and compatibility discussions in the manuals, *BlueDragon 7.1 CFML Compatibility Guide* and *BlueDragon 7.1 CFML Enhancements Guide*, users of the .NET edition should look there particularly for differences specific to the .NET edition, including the following new or enhanced functions: `createObject()`, `getHTTPContext()`, and `render()`, and the following tags: `CFDIRECTORY`, `CFINVOKE`, `CFOBJECT`, `CFQUERY`, `CFPROCPARAM`, `CFREGISTRY`, and `CFSETTING`. Also, see the *BlueDragon 7.1 User Guide* for general information about the BlueDragon Admin console as well as information about other features familiar to CFML developers (Flash integration, CFML IDEs, etc.)

In addition, BlueDragon.NET introduces many new enhancements itself over the Java-based versions of BlueDragon and ColdFusion, including powerful options for integrating your CFML with ASP.NET and .NET objects, as well as exposing your CFML application to built-in features of the .NET framework that require no coding changes to enable. See the discussions in sections 3 and 4 of this document for important information.

2.5 Editors for Creating/Editing CFML and ASP.NET Pages

CFML developers can continue to use their favorite editors for creating/editing CFML pages, including CF Studio, HomeSite+, Dreamweaver MX, CFEclipse, and so on. Note, however, that there are tools that each of these has some support for editing ASP.NET pages (Dreamweaver MX, in particular), and there are also other traditional ASP.NET editors with some support for CFML pages. For more information, see the manual, *Integrating CFML with ASP.NET and the Microsoft .NET Framework*, and the section of this same name.

2.6 Understanding and Troubleshooting BlueDragon.NET Issues

Finally, as you begin exploring BlueDragon.NET, be aware of several resources provided here to help you in understanding details of the .NET Framework as well as troubleshooting techniques

that may be new to both CFML and ASP.NET developers. These are discussed in sections 6 and 7. Additional resources for understanding .NET are provided in section 9.

If you have difficulty with anything related to BlueDragon, please note that we have several sources of free and paid support. See the discussion of technical support in section 1.5.

3 Benefits of Deploying CFML on .NET

BlueDragon for the Microsoft .NET Framework allows existing CFML applications to be re-deployed onto any server that's running the Microsoft .NET Framework 2.0 or higher, eliminating the need for proprietary Adobe ColdFusion servers. It's also important to note that BlueDragon.NET is not a server or service but instead extends the .NET Framework in a standard way (via an HttpHandler) so that it can process CFML. See Section 6 for more information on the technical underpinnings of BlueDragon.NET.

Further, there are several advantages when CFML is deployed on .NET, as discussed below.

3.1 Audiences for Deploying CFML on .NET

Deploying CFML on .NET will be of interest to two categories of CFML developers. The first includes those working in an organization (or who have clients) moving to the .NET framework. Such CFML developers will be faced with the prospect of rewriting all of their CFML applications in ASP.NET. Now they don't have to; they can keep their CFML and simply redeploy it on .NET.

The second category includes those who don't have a pressing need to move to .NET, but who could find advantages in moving to .NET, or in moving to BlueDragon. There are advantages that BlueDragon gives you over CFMX, and there are additional advantages to running CFML on .NET that you can't get with ColdFusion.

3.2 Benefits of Deploying CFML on BlueDragon.NET

For many, the most important aspect of being able to deploy CFML on .NET is that they can avoid a lengthy and expensive rewrite of the CFML into ASP.NET. BlueDragon.NET extends the .NET framework to enable it to process CFML pages.

There are many other specific benefits, however, which can be classified as follows and will be expanded upon in the following sections:

- Benefits from Running CFML on .NET Without Code Changes
- Benefits from CFML/ASP.NET Integration
- Benefits from Learning and Using ASP.NET Additional Features
- Benefits Enabled in .NET 2.0
- Benefits In Learning ASP.NET and .NET At Your Own Pace
- Other BlueDragon and New Atlanta Advantages

3.2.1 Benefits from Running CFML on .NET Without Code Changes

CFML pages deployed on .NET can benefit from several features enabled by either the .NET framework or IIS, many without any required changes in CFML:

- CFML queries are ADO.NET under the covers
- CFML web services are native .NET web services

- .NET includes support for clustering, failover, and load-balancing
- Session replication across clusters
- Session persistence over restarts
- Resource throttling and auto restart/recovery
- Multiple independent instances (application isolation)
- Multiple BlueDragon Admin Consoles
- Optional Application Pooling in IIS 6 (greater isolation)
- Application sandboxing (protecting shared resources)
- Declarative login security features (including Active Directory)
- Performance monitoring
- Application tracing and reporting mechanisms
- Enhanced error handling
- And more

These features are discussed further in section 4.

3.2.2 Benefits from CFML/ASP.NET Integration

There are benefits for CFML developers integrating their CFML with the .NET framework, including (but not limited to):

- CFML and ASP.NET applications can share session, application, request and other scopes (including complex datatypes like structures, arrays, and queries)

- CFML applications can include output from and forward control to ASP.NET templates, and vice-versa

- CFML applications can use `CFOBJECT` and `createObject()` to call upon .NET components (including the .NET Framework classes, business objects you might write in-house, third-party objects you may acquire, and COM objects)

Further, BlueDragon.NET offers powerful features for integration of CFML objects (templates, components, and custom tags) from ASP.NET pages:

- ASP.NET pages can invoke CFML components (CFCs) , call CFML custom tags (including CFXs), and include CFML pages

- ASP.NET pages can execute CFML code inline (within the ASP.NET page) and share data in any CFML scope

- ASP.NET pages can be directed to execute an application's Application.cfm and OnRequestEnd.cfm files

Each of these integration features is discussed in further detail in the manual, *Integrating CFML with ASP.NET and the Microsoft .NET Framework.*

3.2.3 Benefits from Learning and Using ASP.NET Additional Features

Still other benefits of ASP.NET are worth exploring, some of which can be leveraged by integrating CFML and ASP.NET, include:

- the many rich user interface controls such as the calendar, datagrid, adrotator, datalist, repeater, and more (and 3rd party controls beyond those), some of which are discussed in the manual, *Integrating CFML with ASP.NET and the Microsoft .NET Framework*
- built-in support for mobile devices
- built-in support for internationalization
- built-in Active Directory support
- built-in support for caching page and partial page output as well as data, with refresh triggers based on query string values, file updates, and more
- built-in application and session event handling via global.asax
- built-in integration with Performance Monitor (as discussed in section 8.3.3)
- built-in form validation
- built-in support for configuration files (as an alternative to application variables), as discussed in the manual, *Integrating CFML with ASP.NET and the Microsoft .NET Framework*

Look for additional technotes to be developed in the future discussing integration of these features from BlueDragon.NET.

3.2.4 Benefits Enabled in .NET 2.0

In addition, the .NET 2.0 Framework offers still more possibilities:

- over 45 new controls for rich user interfaces including menus, trees, wizards, datasource controls & more
- built-in portal support through web parts
- enhanced caching, including query dependencies
- support for master pages, from which other content pages can inherit
- support for themes and skins
- enhanced configuration support and application health monitoring
- and much more

3.2.5 Benefits In Learning ASP.NET and .NET At Your Own Pace

Most important to some, web developers can continue to enjoy the productivity and ease-of-use of CFML, but in a standard .NET environment.

We make it easy for CFML developers to learn about and integrate with ASP.NET and the .NET Framework, at their own pace and without need to learn many of the details usually associated with such programming. They can continue to use their preferred tools (Dreamweaver MX, CFEclipse, CF Studio, HomeSite+, PrimalCode, etc.) to edit their CFML, and some of those tools support creation of both CFML and ASP.NET pages.

When developers are interested in learning more about .NET and building native .NET pages or components, they will also find that Microsoft's new Visual Web Developer 2005 Express Edition should be even more accessible and familiar to their experience working with more traditional CFML tools than previous editions of Visual Studio.

We like to say that BlueDragon.NET offers training wheels for CFML developers in their move to .NET. They can move some or all of their applications (and developers) to the new platform at whatever pace they deem appropriate, or they can just leverage the better platform that .NET provides for their existing CFML applications. The next section expands on that idea of why CFML code, unchanged, simply runs better on .NET.

3.2.6 Other BlueDragon and New Atlanta Advantages

There are many additional benefits to running CFML on BlueDragon, as are outlined in the other manuals in the BlueDragon documentation set. See section 2.4 for links to those resources.

4 .NET Features Requiring No Change in CFML Code

There are some features of the .NET Framework which provide benefit to CFML developers even if they don't change any of their CFML code. New Atlanta believes that .NET simply provides a better platform for CFML execution. This section discusses some of the features.

4.1 .NET Framework Features That CFML Pages Inherit

There are several features that the .NET framework enables which normally are discussed only with respect to processing ASP.NET pages. Since BlueDragon.NET enables CFML pages to be processed similarly to ASP.NET pages, these features and benefits are available (or can be configured to apply) to CFML pages as well.

These features require no changes to the CFML pages and instead are configured in IIS or the .NET framework by way of XML entries defined in the standard .NET configuration file, `web.config`. See section 6.3 and following for more on the location and purpose of this file and how to edit it.

Following are some of the features that can be enabled in the .NET framework to benefit all pages, including CFML pages:

- Queries in CFML are processed using ADO.NET, which offers both enhanced performance and added features over JDBC-based processing
    - As described in section 4.2, database processing in BlueDragon leverages Microsoft's ADO.NET drivers for all database processing. Besides the benefits of Microsoft's native support and performance, among the features that can be leveraged is use of ADO.NET connection pooling, as discussed in that section 4.2. No CFML code changes are required to leverage this benefit.
- Web services in CFML are served as native .NET web services, offering enhanced functionality over java-based web services
    - See section 4.3 for more information
- Leveraging .NET Clustering, Load-Balancing, and Fail-over
    - Because CFML runs in the same pipeline as ASP.NET, any available mechanisms (from Microsoft or third parties) to enable clustering, load-balancing, and fail-over will accrue to the benefit of CFML developers
    - Further, because CFML session variables are integrated with ASP.NET session variables (next bullet), mechanisms available to persist sessions to database or other shared datastores enable clustering without requiring "sticky sessions"
- Leveraging .NET Session Variable Persistence for Clustering
    - It is possible to configure web applications in the .NET framework so that session variables are stored not just in memory but also in a database or a state server (a

service running on the same or another server). If BlueDragon is configured to use .NET sessions (in the BlueDragon Admin console), then CFML session variables also benefit from this feature. This gives session variables many of the benefits of client variables while also enabling clustering of sessions. For more information, see any discussion of the .NET `sessionState` directive, such as in:

http://msdn2.microsoft.com/en-us/library/ms178586

- Additionally, third party software exists to provide still more scalable, robust management of .NET sessions, particularly for clustering. ScaleOutSoftware, for example, has been demonstrated to work with BlueDragon.NET.

  http://www.scaleoutsoftware.com/

- Leveraging .NET Session Variable Persistence Over Restarts

  - Related to persistent session variables, another significant benefit of using session persistence is that they are persisted over server restarts. In traditional ColdFusion servers, a restart would cause loss of all sessions. With BlueDragon.NET, if persistent sessions are enabled in .NET and ASP.NET sessions are enabled in the BlueDragon Admin, then sessions are not lost on restart. Existing CFML code that sets or gets session variables will benefit from this feature, without change.

- Leveraging .NET Application Restart Mechanisms

  - When an error occurs in a .NET application domain which causes undesirable excessive use of resources (too much memory, too many requests, requests taking too long, etc.), the Framework has built-in limiters set that detect the problem and try to protect the application. It will create a new instance of the application, sending new requests to that new instance, and it will quiesce and eventually shutdown the errant application instance. Since CFML pages run in a .NET application domain, the benefit accrues to CFML code. This is discussed further at:

  http://samples.gotdotnet.com/quickstart/aspplus/doc/procmodel.aspx

- Multiple Independent Instances

  - .NET defines each application (web site, virtual directory, or directory declared in IIS as an application) to be independent from others—even on the same machine—with its own administrative settings, website configuration, shared variable scopes, and more. See section 5.1.1 for more information.

- Multiple BlueDragon Admin Consoles per Web Site, Virtual Directory, and More

  - As discussed in section 5.1.1, BlueDragon.NET leverages a feature of .NET where each web site, virtual directory, and directory declared as an application in IIS will be an independent isolated application. Besides isolating shared variable spaces (like `session`, `application`, and `server` scopes), each application also

has its own BlueDragon admin console and can be configured independently. Of course, each may also have its own .NET configuration settings (as enabled in the `web.config` file, discussed in 6.3). These multiple admin consoles all also inherit from a single, central `bluedragon.xml` file, as discussed in section 5.2.2.

- Leveraging IIS Application Protection (Pooling)
    - In Windows 2003 using IIS 6, it's possible to designate multiple .NET web applications (and by association a CFML web applications) to be isolated from each other using "Application Pooling".
- Leveraging .NET Sandboxing
    - Additionally, it's possible to configure a web application so that it cannot access files and directories outside the web application directory space. Information about this and other .NET security practices is presented at:

      http://msdn.microsoft.com/en-us/library/ms998372.aspx
- Leveraging .NET Login Security
    - It is possible to configure web applications in the .NET framework so that when an ASP.NET page is requested, authentication security can be performed automatically, using either a form, or database, or Windows authentication. Because CFML pages process through the same pipeline as ASP.NET pages, CFML page requests are secured this way as well. An example of enabling ASP.NET page request security is offered here:

      http://www.dotnetjunkies.com/quickstart/aspplus/doc/formsauth.aspx
- Leveraging built-in integration with Performance Monitor
    - The Windows Operating System offers a Performance Monitor tool that permits observing, logging, and tracing (detecting events) regarding performance of both .NET and IIS, as well as ADO.NET, and many other important features. You can leverage this reporting and tracing, without change to your CFML code, as discussed in section 8.3.3.
- Custom error handling
    - It is possible to configure web applications in the .NET framework so that custom error pages are presented to the user for such http error codes as 404 (file not found) or 500 (server error). Such errors can also be configured to only be handled this way for remote requests, while local requests (such as from the developers machine) are processed normally. For more information, see:

      http://www.dotnetjunkies.com/quickstart/aspplus/doc/handlingerrs.aspx

- Leveraging .NET Tracing/Debugging Output

    - It is possible to configure web applications in the .NET framework so that you can enable tracing/debugging output to be created either on a given page or in an available trace monitoring page (trace.axd) that can track output from any page request from any user. For more information, see:

    http://www.dotnetjunkies.com/quickstart/aspplus/doc/tracelogapp.aspx

Where the mechanisms to enable these features are not documented here, and to learn about many more, see the Microsoft documentation or various books, articles, blogs, and web sites. Additionally, see the resources listed in section 9.

4.2 CFML-based Database Processing is ADO.NET under the Covers

Another benefit of the .NET Framework which generally requires no changes in CFML code is the fact that when performing CFQUERY and other database tags, the .NET edition of BlueDragon leverages ADO.NET under the covers. (The Java editions of BlueDragon and CFMX leverage JDBC for database processing, instead.)

Some of the advantages of ADO.NET are described in this section. Note that your CFML tags, and even the admin console datasource configuration process, remain substantially unchanged. Under the covers, the query objects created are ADO.NET, and as such they benefit from the improved performance and reliability of having database processing mechanisms that are created by Microsoft rather than a third party (as with the CFMX database drivers from DataDirect).

Following are some advantages from BlueDragon leveraging ADO.NET.

4.2.1 CFQUERY Results Are ADO.NET DataTables, and Vice-versa

BlueDragon automatically causes CFQUERY results to be treated in ASP.NET as .NET datatables, and vice-versa. Various features regarding sharing of data between CFML and ASP.NET, as discussed in section 3.2.2, demonstrate leveraging this feature.

4.2.2 ADO.NET Connection Pooling

One advantage of the underlying ADO.NET implementation is its support for enhanced connection pooling. By default, datasources defined in the BlueDragon Admin console use a connection pooling mechanism that is built into BlueDragon. You can cause BlueDragon to give up control of connection pooling for a given datasource, so that ADO.NET connection pooling takes its place.

In the BlueDragon Admin console, where a datasource is defined, there is an available `Maximum Connections` field, which defaults to `24`. If this value is set to `0`, BlueDragon will not perform connection pooling. Further, you can specify details about how to configure ADO.NET connection pooling by passing appropriate values into the `Connection String` field on the same page.

For more information on setting these values in the Admin console, see the online help link on the page where a datasource is defined.

4.2.3 DSN-Less Connections

ColdFusion 5 had added support for a new `DBTYPE="dynamic"` option on `CFQUERY` and related database processing tags. CFMX removed support for that feature, as did the Java editions of BlueDragon. But the .NET edition of BlueDragon now supports this feature. For more information, see the discussion of `CFQUERY` in the *BlueDragon 7.1 CFML Enhancements Guide*.

4.2.4 ASP.NET Connection Strings

BlueDragon.NET also supports the use of ASP.NET connection strings in place of BlueDragon datasources. When rendering a `CFQUERY` tag—or any other tag that specifies a `DATASOURCE` attribute—BlueDragon 7.1 will first look for a configured datasource of the specified name. If a BlueDragon datasource of the specified name is not found, BlueDragon will then look for an ASP.NET connection string of that name.

This feature allows ASP.NET connections strings and associated ADO.NET connection pools to be shared across ASP.NET and CFML pages.

4.3 CFML Web Services Served as .NET Web Services

When a CFML web services are exposed on *BlueDragon for the Microsoft .NET Framework*, it may be important to know that they are created as pure .NET web services. BlueDragon has been certified as *.NET Connected* because of this feature.

Besides affording the strength and reliability of Microsoft's implementation of web services (compared to the open source Axis-based web services implementation in CFMX and the Java editions of BlueDragon), another benefit is that when CFML web services are browsed in the .NET edition of BlueDragon, their metadata display is provided by the normal .NET interface typically shown for ASP.NET web services (pages served using the `.asmx` extension).

In other words, if a CFC method is enabled to permit access to it via web services (using the `Access="remote"` attribute of `CFFUNCTION`), you can request display of that CFC's methods as a web service in the browser, such as:

```
http://localhost/somedir/somecfc.cfc
```

This will display an HTML-based interface showing its available method(s) along with links to enable invocation of the method, just as would be made available to those who attempt to browse an ASP.NET web service (a file with an `asmx` extension).

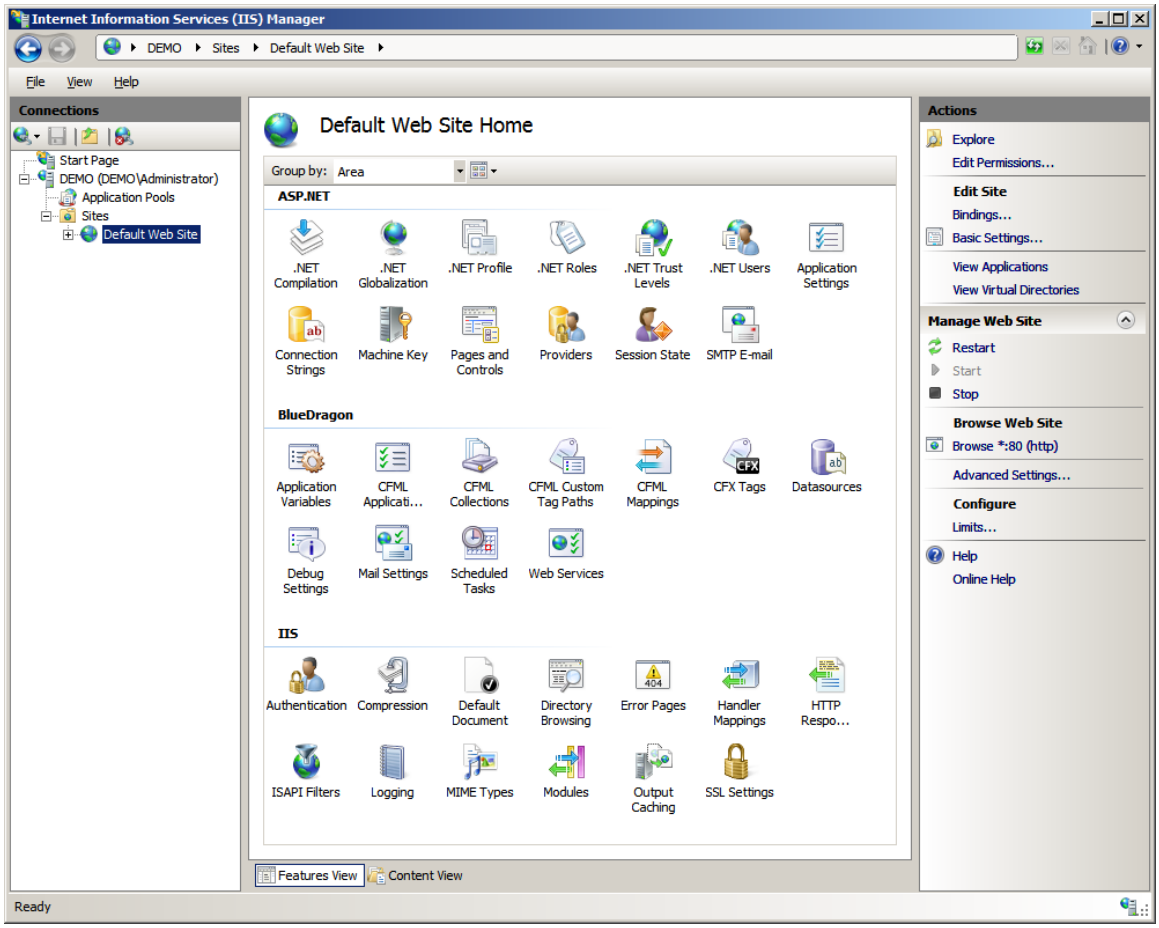
5 Accessing the BlueDragon Administration Console

A unique feature of BlueDragon.NET is that every IIS web site and web application has its own separate configuration data and administration console. For BlueDragon.NET on IIS 7.0—on Windows Vista and Windows Server 2008—BlueDragon administration is integrated with the IIS Manager. For BlueDragon.NET on IIS 6.0 (Windows Server 2003) and IIS 5.1 (Windows XP), BlueDragon administration and configuration is done via a browser-based administration console.

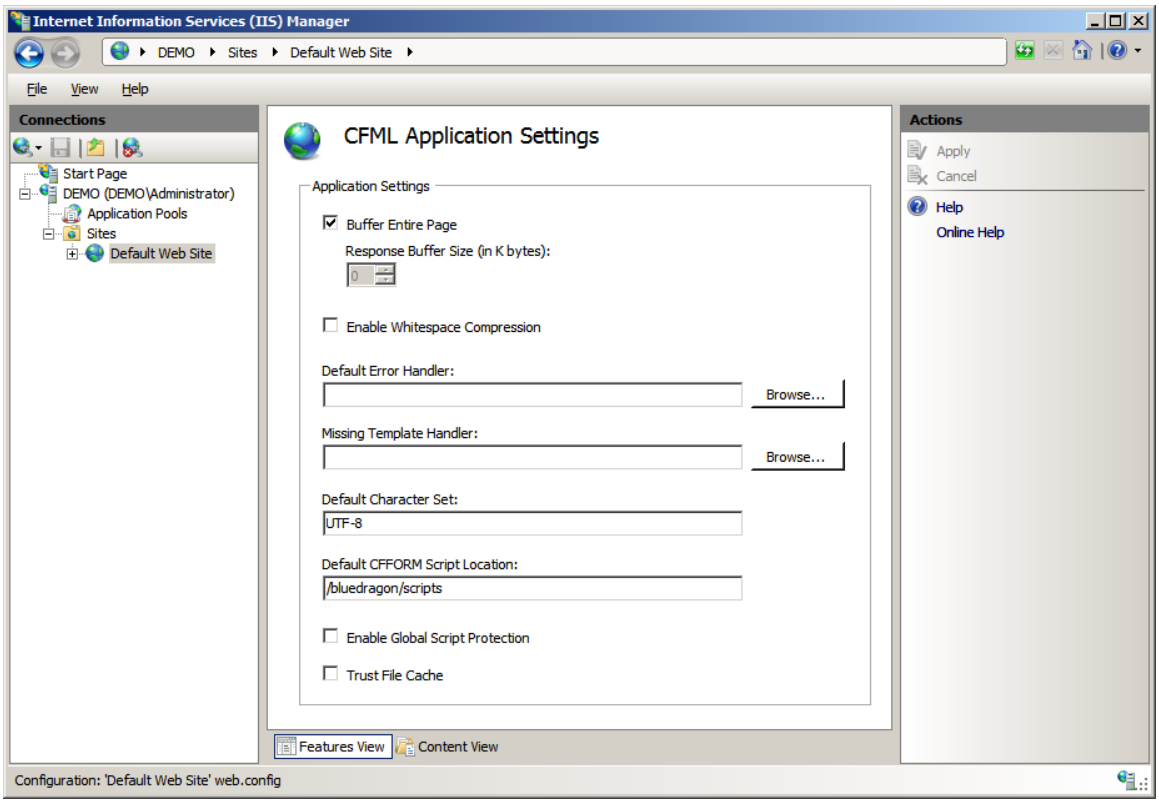
5.1 BlueDragon.NET on IIS 7.0

IIS 7.0 on Windows Vista and Windows Server 2008 introduces a new IIS Manager for administration and configuration that is extensible by third parties. BlueDragon.NET 7.1 extends IIS Manager for IIS 7.0 to support BlueDragon.NET administration and configuration, as illustrated in the figures below.

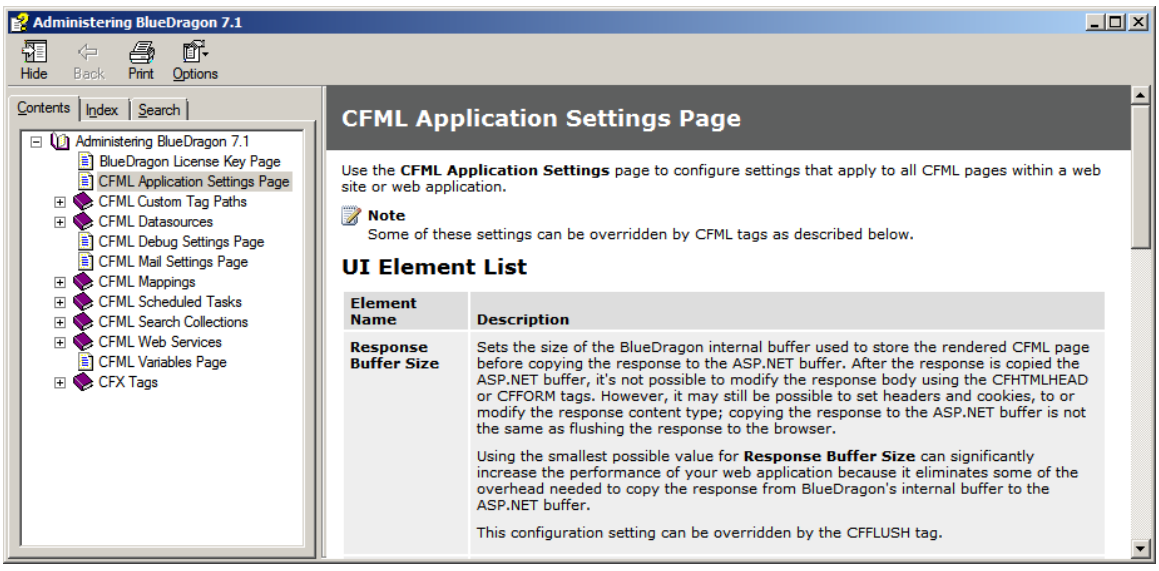
The following figure displays configuration settings for the Default Web Site; note the BlueDragon configuration options in the center of the figure. Changes made to these configuration options will apply only to the Default Web Site, and not to any web sites that may be subsequently added to IIS.



The following figure illustrates configuring CFML Application Settings for the Default Web Site. Again, changes made to these configuration options will apply only to the Default Web Site, and not to any web sites that may be subsequently added to IIS.

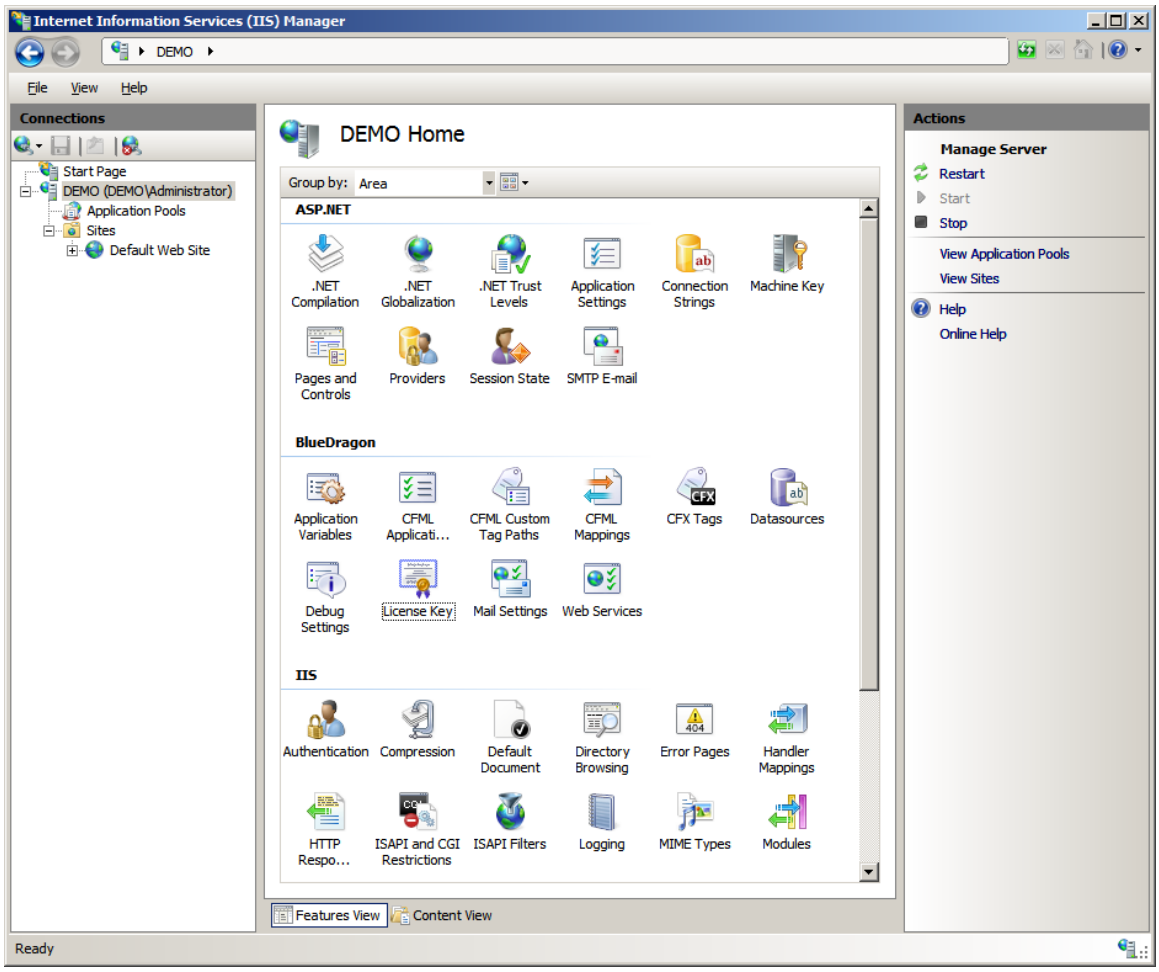


BlueDragon.NET provides detailed help files that are integrated with the IIS Manager help system. Access the help files by clicking the “Help” link under the “Actions” menu in the right panel of any BlueDragon.NET configuration page. The following figure illustrates the BlueDragon.NET help files.


Administering BlueDragon 7.1
Hide
Back
Print
Options
Contents
Index
Search
Administering BlueDragon 7.1
BlueDragon License Key Page
CFML Application Settings Page
CFML Custom Tag Paths
CFML Datasources
CFML Debug Settings Page
CFML Mail Settings Page
CFML Mappings
CFML Scheduled Tasks
CFML Search Collections
CFML Web Services
CFML Variables Page
CFX Tags
CFML Application Settings Page
Use the CFML Application Settings page to configure settings that apply to all CFML pages within a web site or web application.
Note
Some of these settings can be overridden by CFML tags as described below.
UI Element List
Element Name
Description
Response Buffer Size
Sets the size of the BlueDragon internal buffer used to store the rendered CFML page before copying the response to the ASP.NET buffer. After the response is copied the ASP.NET buffer, it's not possible to modify the response body using the CFHTMLHEAD or CFFORM tags. However, it may still be possible to set headers and cookies, to or modify the response content type; copying the response to the ASP.NET buffer is not the same as flushing the response to the browser.
Using the smallest possible value for Response Buffer Size can significantly increase the performance of your web application because it eliminates some of the overhead needed to copy the response from BlueDragon's internal buffer to the ASP.NET buffer.
This configuration setting can be overridden by the CFFLUSH tag.

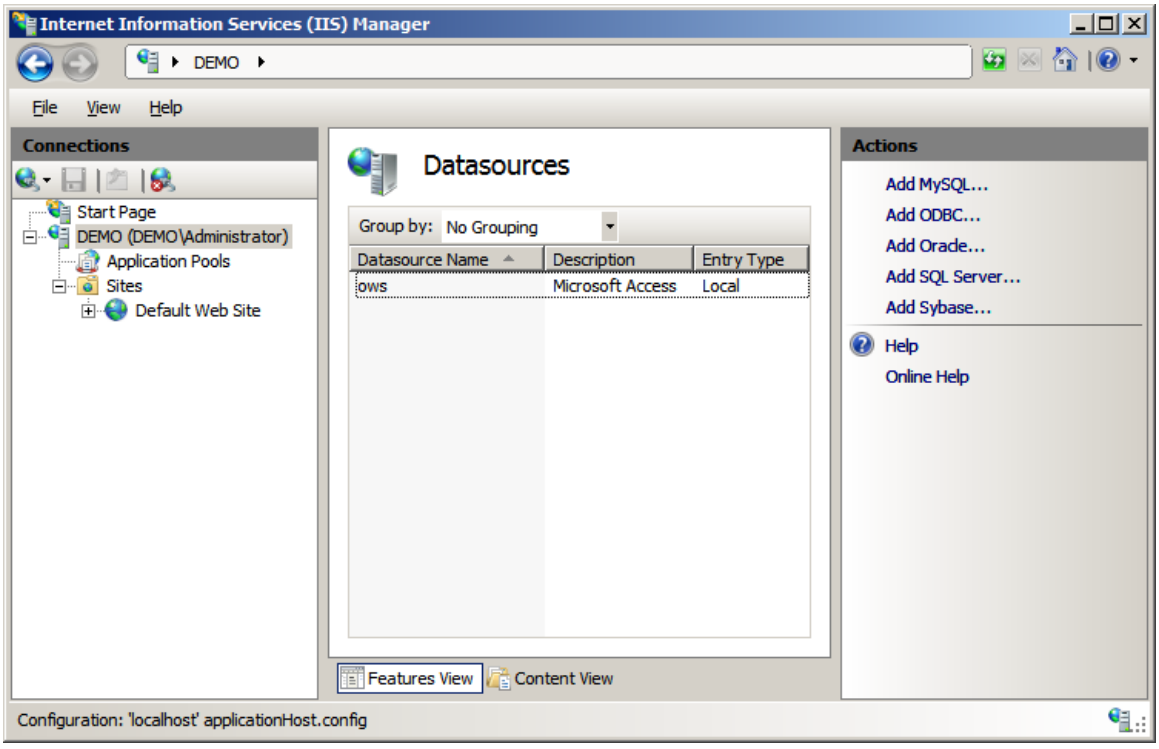
5.1.1 Server Settings and Configuration Inheritance

The IIS Manager for IIS 7.0 allows some settings to be configured at the server level. Other settings—such as the CFML Search Collections and CFML Web Services for BlueDragon—are only configurable for individual web sites and web applications, and may not be configured at the server level.



Settings that may be configured at both the server level and for individual web sites and web applications (which includes most settings) exist in an inheritance relationship. That is, settings at the server level are inherited by all web sites and web applications, and may be overridden at the web site or web application level.

For example, the following figure illustrates a BlueDragon datasource—named “ows”—that has been configured at the server level within IIS Manager (notice the status text at the lower left that indicates that this configuration setting exists in the server-wide `applicationHost.config` file for the server “localhost”).

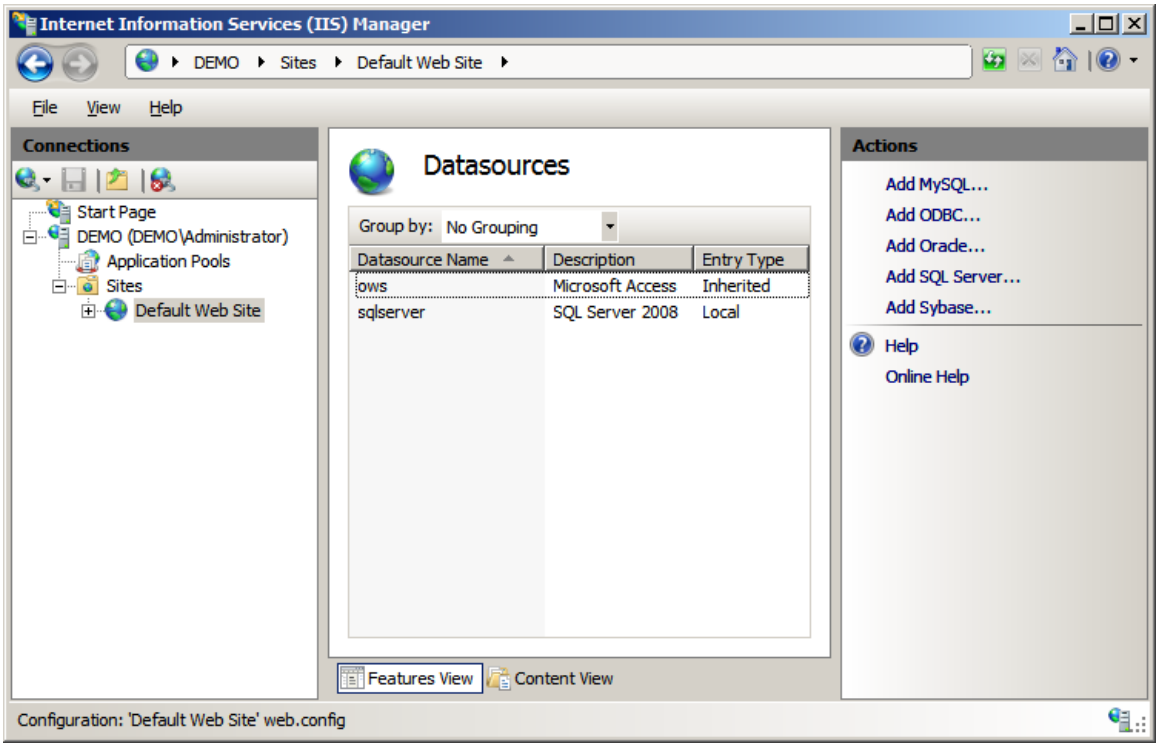


Now consider the following figure, which illustrates the BlueDragon datasources configured for the Default Web Site. The "Entry Type" for the "ows" datasource is listed as "Inherited" indicating that this configuration setting was inherited from the server level. If the "ows" datasource is not needed by the Default Web Site, it can be deleted at the Default Web Site level without affecting the server-level configuration or any other web sites that may be subsequently configured for IIS.

The "Entry Type" for the "sqlserver" datasource is listed as "Local" indicating that it has been configured only for the Default Web Site and will not be available for any other web sites that may be subsequently configured for IIS (notice the status text at the lower left that indicates that this configuration setting exists in the `web.config` file for the "Default Web Site").

If the configuration settings for the "ows" datasource are modified in any way, those changes only affect the Default Web Site and do not affect the server-level configuration in any way. In this case, the "Entry Type" field value would change from "Inherited" to "Local."

In addition to inheriting configuration setting from the server level to the web site level, IIS web sites may themselves contain web applications that have separate configuration settings within their own `web.config` files. Just as web sites inherit configuration settings from the server level, web applications in turn inherit configuration settings from the parent web site level (including configuration settings that the web site inherited from the server level).



5.2 BlueDragon.NET on IIS 6.0 and 5.1

The browser-based BlueDragon admin console for a given web site can be accessed via the following URL, replacing "www.server.com" with the host name or IP address of the web site:

`http://www.server.com/bluedragon/admin.cfm`

Note, however, that a unique difference in BlueDragon.NET is that every IIS web application on the server (which IIS defines as each web site, virtual directory, or directory configured in IIS as an “application”) **will also have its own admin console**, as discussed in the following sections. The URL to access the admin console for each would differ from the above, and could appear as:

`http://www.server.com/myapp/bluedragon/admin.cfm`

This issue of multiple BlueDragon admin consoles in the .NET edition is discussed below, as are matters of where configuration settings are stored and how to secure the Admin console, which are different in the .NET edition. For general information on using the BlueDragon admin console, including configuring ODBC and other datasources and still more features, see the *BlueDragon 7.1 User Guide*.

5.2.1 Admin Console Defined Per Web App

A unique feature of BlueDragon.NET is that each IIS web site, virtual directory, or directory configured in IIS as an “application” (as discussed in Section 6) will also have its own BlueDragon admin console. .NET considers each of these to be its own “application domain” or “web

application". If you prefer to have setting apply globally to all web apps, see section 5.1.2. (Also, to reset a virtual directory so that it does not have its own admin console, see section 5.1.3.)

To open the BlueDragon admin console for a given web site, virtual directory, or directory configured in IIS as an application (any of these three will be referred from here on as simply a "web app"), append `/bluedragon/admin.cfm` to the URL for browsing the root of that web app. For example, if you configure a virtual directory (or directory declared in IIS as an application) that's browsed using context path of "myapp", then the admin console for that will be accessed via the following URL:

`http://www.server.com/myapp/bluedragon/admin.cfm`

If you're having trouble determining the correct URL to use to request the admin console for a given directory, see the code snippet offered in section 8.2.

If you're interested in configuring a directory so that it has its own admin console and settings, you would use the mechanism in IIS to declare it to be an application. See section 6.5 for more information.

Similarly, if you configure a web site to have BlueDragon process its CFML pages, then you'd append the `/bluedragon/admin.cfm` to the different hostname, ip address, or port used to distinguish it from other web sites.

Changes made in a particular web app's Admin console apply only to templates executed within that web app. If one web app is nested within another (as a virtual directory—or directory configured in IIS as an application—is naturally nested within a web site), the nested web app does NOT inherit the BlueDragon admin settings of the parent web app.

See the next section for an option to cause inheritance of global configuration settings by all webapps on a server.

As discussed in section 5.2, changes to the Admin console are written to the `bluedragon.xml` file, whose location is discussed in that section.

5.2.2 Applying BlueDragon Admin Configuration Settings Globally

Assuming you've used one of the first three installation options for BlueDragon.NET (an option other than `Single Virtual Directory`), each webapp (web site, virtual directory, or directory configured in IIS as an application) will have its own, separate BlueDragon admin console and configuration settings, as discussed in the previous section.

There are, however, some settings which should be shared by all webapps on the server (the BlueDragon license key, for instance.)

Also, what if you wanted to define some setting (like adding a certain datasource) so that it's available to all web apps? Must you manually add that setting to every web app? What if you have many web sites? Or many virtual directories (or directories configured in IIS as an application) within one or more web sites? That would be both tedious and error-prone.

BlueDragon.NET offers a unique solution to this challenge. There is a single, global `bluedragon.xml` configuration file, but it's stored in the `config` directory under the central BlueDragon installation location, which by default is `C:\Program Files\New Atlanta\BlueDragon.NET\`. So, to effect a change that would apply to all webapp's on a server, apply the needed XML to:

`C:\Program Files\New Atlanta\BlueDragon.NET\config\bluedragon.xml`.

The XML schema for the `bluedragon.xml` file is not documented, so the most effective way to make such a global change would be to first implement the change using the BlueDragon Admin console of a given webapp, then edit the `bluedragon.xml` file for that webapp, and copy/paste the needed changes into the global xml file. The location of a given webapp's `bluedragon.xml` file is discussed in section 5.2. *You must exercise caution when manually editing the central (or any) `bluedragon.xml` file.*

Finally, if you change any bluedragon.xml file, you must restart the affected web app for the changes to take effect. See section 7.1 for information on restarting web apps.

5.2.3 Setting a (Virtual) Directory to Not Have Its Own Admin Console

As discussed in section 5.1.1, assuming you've used one of the first three installation options for BlueDragon.NET, any virtual directory you define in IIS will by default be declared as a .NET application, and therefore it (and any directory declared manually to be an application) will have its own BlueDragon Admin console.

A challenge arises when changes are made in the Admin console of a web site root (because from ColdFusion experience developers expected to only have one admin console) and those changes do not apply to code in a subdirectory (or virtual directory) of that web site.

If the declaration of a given (virtual) directory to be a web application isn't really needed for any other reasons, it is possible to change the (virtual) directory in IIS so that it is no longer a separate .NET application. This simply reverses the scenario and steps described in section 5.1.1. In such a case the code will instead operate within the scope of the web site (or higher-level virtual directory) in which it's located and will use that higher-level BlueDragon admin console. (This subject is different from disabling the ability to open the BlueDragon Admin console, as discussed in section 5.3.4.)

To reset a virtual directory so it's no longer its own .NET application (and no longer has its own BlueDragon Admin console), right-click on the Virtual Directory's name in IIS and choose `Properties`. In the `Virtual Directory` tab which is opened by default, notice in the `Application Settings` section of that window, with its available `Remove` button.

Clicking that `Remove` button will remove the designation of this virtual directory as its own web application. Instantly, any requests for CFML pages within that directory will no longer operate under any virtual directory-specific admin console but will instead operate under the BlueDragon admin console of the web site (or other higher-level virtual directory) in which this virtual directory was defined within IIS.

Note that if any requests were made against CFML templates in that virtual directory after BlueDragon.NET was installed, BlueDragon will have created a new subdirectory within the `c:\ Program Files\New Atlanta\BlueDragon.NET\WebSite`*n*`\` directory (as discussed next in section 5.2.1). The work files created for that virtual directory will be ignored once you reset it to not be a .NET application. The files are not removed by BlueDragon upon resetting it this way. Further, if you reset the virtual directory properties in IIS and revert it back to being an application (clicking the `create` button where you previously chose `remove`), any previously configured BlueDragon admin settings for that virtual directory will take affect again.

5.3 BlueDragon Admin Configuration Files

There are various configuration and working files used by BlueDragon. Their location and purpose differs in BlueDragon.NET than may be expected from your prior BlueDragon (or ColdFusion) experience.

5.3.1 Work File Locations

For the first three installation options (`All Web Sites`, `Selected Web Sites`, or `Manual Configuration`), a directory called:

```
c:\ Program Files\New Atlanta\BlueDragon.NET\
```

is created and various work and support files are placed there. For the fourth, `Single Virtual Directory`, option, all work and support files are placed with the directory named during the installation. Some of the work files and directories are not created until a first request is made for a CFML page.

In the case of the first three installation options, a directory called

```
c:\ Program Files\New Atlanta\BlueDragon.NET\WebSiten\
```

is created, where the number *n* represents an internal identification number for the web site reported by IIS. Work files and directories for that web site are stored here. If you manually create a virtual directory (or declare a directory in IIS to be an application) within a web site (as discussed in section 6.5), then a subdirectory with the same name as the (virtual) directory will also be created under:

`c:\Program Files\New Atlanta\BlueDragon.NET\WebSite`*n* directory.

A `\work` directory is created within the web application directory (directories) discussed above, and in that directory are a `bluedragon.log` file and such subdirectories as `cfmail` and `cfschedule` (supporting the tags of the same names).

5.3.2 BlueDragon.xml Configuration File Location

When BlueDragon.NET is deployed on IIS 7.0 on Windows Server 2008 or Windows Vista, most of the BlueDragon configuration data is stored in the IIS 7.0 `web.config` file. In this case, only data for scheduled tasks and search collections is stored in `bluedragon.xml`; all other BlueDragon configuration data is stored in `web.config`.

When BlueDragon.NET is deployed on IIS 5.1 on Windows XP, or on IIS 6.0 on Windows Server 2003, all BlueDragon configuration changes made in the BlueDragon Admin console are stored in a `bluedragon.xml` file.

The location of that file in BlueDragon.NET depends on which of the four installation options was chosen, and it will be stored in a `\config` directory which will be a sibling to the `\work` directory, as discussed in the previous section.

Note that for the first three installation options, there may be multiple admin configuration files, one for each web site, virtual directory, and directory declared in IIS to be an application. Wherever a CFML page has been requested for them, these will have its own `\config` directory with its own `bluedragon.xml` file. Additionally, there will be a central `bluedragon.xml` file from which all the others inherit, as discussed in section 5.1.2.

If you chose the fourth (`Single Virtual Directory`) installation option, then the `bluedragon.xml` file is stored in the `bluedragon\config` directory within the virtual directory chosen during installation. With the `Single Virtual Directory` installation option, there is no inheritance from a central `bluedragon.xml` file.

Finally, if you change any bluedragon.xml file, you must restart the affected web app for the changes to take effect. See section 7.1 for information on restarting web apps.

5.3.3 Central CustomTags Directory Location

For the first three installation options, a central `customtags` directory is created in the:

`c:\Program Files\New Atlanta\BlueDragon.NET` directory.

For the fourth option, `Single Virtual Directory`, a `customtags` directory will be created under the `\bluedragon` directory created within that virtual directory.

5.3.4 No BlueDragon\Admin Directory Exists in Admin Console Path

You may notice that there's no `\bluedragon\admin` directory installed in your web application's docroot. How, then, do things work when you request a file such as `\bluedragon\admin\index.cfm`? Loading of the Admin console is handled through directives implemented in the BlueDragon and .NET Framework configuration files.

If you desire to change the path used to load the admin console (for security purposes), that is possible as discussed in section 5.4.2.

If you use the fourth installation option, however, for a `Single Virtual Directory`, that does create a `\bluedragon` directory within the designated virtual directory location, though again there is no `\bluedragon\admin` directory there.

5.3.5 BlueDragon Datasources

As discussed in the *BlueDragon 7.1 User Guide*, the BlueDragon admin console provides an interface for defining datasources for SQL Server, Oracle, MySQL, Sybase, DB2, and ODBC data-

sources. These datasource connections use native ADO.NET drivers for optimal performance. See the *User Guide* for more details on configuring and managing datasources. For other information on advantageous differences regarding datasources in the .NET edition, see section 4.2.

5.4 Securing the BlueDragon Admin Console

This section applies to BlueDragon.NET when deployed on IIS 5.1 on Windows XP or IIS 6.0 on Windows Server 2003; it does not apply to BlueDragon.NET when deployed on IIS 7.0 on Windows Server 2008 or Windows Vista.

There are several ways in which you may want to secure the BlueDragon admin console, as discussed in this section.

5.4.1 No Admin Console Password Defined Upon Installation

Note that upon installation there is no default password defined for the BlueDragon Admin console(s). It's critical that before deploying on a public-facing server you set a password for your web site and any virtual directory or directory declared in IIS to be an application. Use the admin console's available `General>License & Security` link which has a field for entering the Administration Console Password.

5.4.2 Changing the Admin Console URL Path

As explained at the start of this chapter, the BlueDragon Admin UI is accessed with `/bluedragon/admin.cfm`, appended to the URL for the web site, virtual directory, or directory declared in IIS to be an application.

What if you would like to hide or change the default URL path for the Admin console, for security purposes? As discussed in section 5.2.4, there is no directory you can rename as you may have from your prior ColdFusion experience. You can rename the path to be used, however, by manually editing the appropriate `bluedragon.xml` file, whose location for a given web application is discussed in section 5.2.2.

In this file, under the `<file><application name="admin">` node, simply change the value of the `<context>` element from `bluedragon` to something else. If it was changed to `/bdadmin`, then the path to append to the site/application URL would be `/bdadmin/admin.cfm`.

5.4.3 Restricting Admin Access by IP Address

As a further security precaution, you can control who may access the Admin Console by way of IP address filtering, either by changing values in the admin console itself (under `General>License & Security`, in the field `Allow IPs`) or by editing the `bluedragon.xml` file itself (as discussed in 5.2.2), modifying the entry for `<server><file><application name="admin"><name>admin</name><allowedips></allowedips>`.

The value list provided may be either an address or a range (including support for asterisks, as in `192.*.*.*`). If you want to provide a list of addresses or ranges, separate them with commas.

See the online help for this screen in the Admin UI for more information. Support for IP address exclusion filtering (restricted IPs) is being considered for a future release.

5.4.4 Remove the Admin UI Completely

Rather than rename or restrict the admin URL, some may prefer instead to entirely remove it. There are two ways to remove the Admin UI. First, you can edit the `bluedragon.xml` (for the web site or application, as discussed in section 5.2.2) to either change or remove the `<file><application name="admin">` entry.

If you change the name to something other than `admin`, the admin console will no longer function. You could also remove the entire `<application name="admin">` entry and its children xml entries. Doing so will cause BlueDragon to remove the surrounding `<file>` entry if there are no entries left.

Second, you could also remove the Admin UI by removing or renaming the file `admin.bda`, which is located in the `\config` sub-directory of the BlueDragon installation directory:

```
c:\ Program Files\New Atlanta\bluedragon.net\config
```

for the first three installation options, or the `\config` of a given virtual directory if the fourth, `Single Virtual Directory`, installation option was taken.

6 Understanding the Microsoft .NET Framework

This section is an introduction to the Microsoft .NET framework for developers who are new to this subject. Experienced .NET developers may still want to follow along. Configuring the .NET framework to support CFML involves steps that ASP.NET developers wouldn't normally need to perform. Fortunately, the installer for BlueDragon.NET will perform this configuration automatically. The following information is provided for those wanting to understand the underlying process.

Additionally, if you want to leverage some features of the .NET framework, as discussed in section 4, these will require editing of the .NET configuration files, which will also be discussed in this chapter.

6.1 BlueDragon as a .NET HTTP Handler

BlueDragon.NET extends the .NET framework so that it can process CFML files. IIS and .NET already know how to run ASP.NET files, assuming they are properly configured (see section 2.1.1). BlueDragon.NET has nothing to do with execution of ASP.NET pages and instead runs only CFML pages (though it offers some extension that can be placed within ASP.NET pages).

The .NET framework offers a standardized mechanism for enabling support for another file extension and language, as with CFML files, by way of what it calls HTTP Handlers.

BlueDragon.NET is implemented as such an HTTPHandler, which is implemented within the `BlueDragon.dll` assembly. The location where this file is stored will depend on the installation option chosen when installing BlueDragon (see Section 2.2.1).

If either of the first three installation options were chosen (`All Web Sites`, `Selected Web Sites`, or `Manual Configuration`), this file and a couple of related BlueDragon DLLs (summing less than four megabytes total in size) are placed by the installer in the Global Assembly Cache (discussed in the next section).

If the fourth installation option is chosen (`Single Virtual Directory`), these files are instead placed in the `\bin` directory under that virtual directory.

The configuration of this HTTPHandler is implemented in a standard .NET configuration file, `web.config`. This is discussed in section 6.3.

6.2 Global Assembly Cache (GAC)

The Global Assembly Cache, or GAC, is a system-wide repository of .NET components (called assemblies) that enable functionality in the .NET framework for all .NET applications.

If you choose either of the first three installation choices of BlueDragon.NET, the pertinent BlueDragon DLL files (assemblies) will be implemented in the GAC. The location of this directory is typically `C:\WINDOWS\assembly\`.

If you prefer to avoid making such changes to the GAC, the fourth option in the BlueDragon installer will instead create a single virtual directory with all BlueDragon DLL files implemented in its own `/bin` directory.

Note as well that there is a `/bin` directory may exist within the docroot for any web site, virtual directory root, or directory declared in IIS to be an application, and you may place your own application-specific DLL files there.

6.3 Web.config file

The declaration of an HTTPHandler is defined in a configuration file named web.config. web.config holds XML entries whose purpose and format are defined by the .NET framework to control configuration of the environment or a specific web application.

It may be useful to learn that the .NET framework has pre-existing configuration handlers implemented designating how to process ASPX and other ASP.NET files using HttpHandlers. The fact that BlueDragon is implemented as an HttpHandler is a testament to its native .NET approach to implementing CFML support.

The `web.config` file, is a file that can be created for each web application defined on a server. (Web applications are defined in section 6.5.) Configuration information in the `web.config` file inherits overrides any `web.config` file in a parent directory. Similarly, any values not specified in the `web.config` file are inherited from any `web.config` files in parent directories. The BlueDragon installer will automatically create (or edit any existing) `web.config` file and configure it for BlueDragon.

You do not need to (and should not) manually configure a `web.config` file to add entries to support for BlueDragon processing of CFML pages.

If, however, you have any reason to desire to create a `web.config` file (such as to enable other .NET features that require this file) and none exists, you can easily create a skeletal one, such as:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>
</configuration>
```

For more information on .net configuration files, see:

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpconaspnetconfiguration.asp

6.4 IIS Configuration of CFML File Extensions

The final link in the configuration of BlueDragon.NET is the mapping of CFML-related file extensions (`CFM`, `CFML`, `CFCHART`, and `CFC`) so that they are handled by the .NET framework.

If you have properly configured IIS and .NET for ASP.NET support, you may notice that the extension mappings in IIS for ASP.NET files (such as `ASPX`, `ASMX`, and `ASCX`) are configured so that they are handed to the `aspnet_isapi.dll` file defined for the .NET framework such as:

`C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\aspnet_isapi.dll`.

With BlueDragon.NET, CFML files are also to be handed to this same `aspnet_isapi.dll` file (not to BlueDragon itself). This is yet another testament to how BlueDragon.NET implements CFML as a native extension to the .NET framework.

The BlueDragon.NET installation process will automatically configure IIS so that the CFML file extensions are handed to the .NET framework. If you choose the third configuration alternative (`Manual Configuration`), or if you have any reason to need to repair or alter this extension mapping, see section 7.2.1 for additional information and assistance.

6.5 .NET Web Applications

While the installation program for BlueDragon.NET will configure IIS and the appropriate .NET configuration file to define BlueDragon as an HTTP Handler for either all web sites, a web site, or a single virtual directory, there may be instances where you want to further define configuration options for a specific web site, virtual directory, or directory declared in IIS to be an application, such as to leverage those features of .NET discussed in Section 4.

Additionally, as discussed in section 5.1.1, the creation of a web application will enable that application to have its own BlueDragon admin console and configuration settings.

These and some other capabilities in the .NET framework can only be obtained if a directory has been defined as an “application” to IIS. This is done by editing the properties for the directory (right-click on a directory or virtual directory in the IIS Manager and choose `properties`), and then selecting the `Create` button in the `Directory` (or `Virtual Directory`) tab.

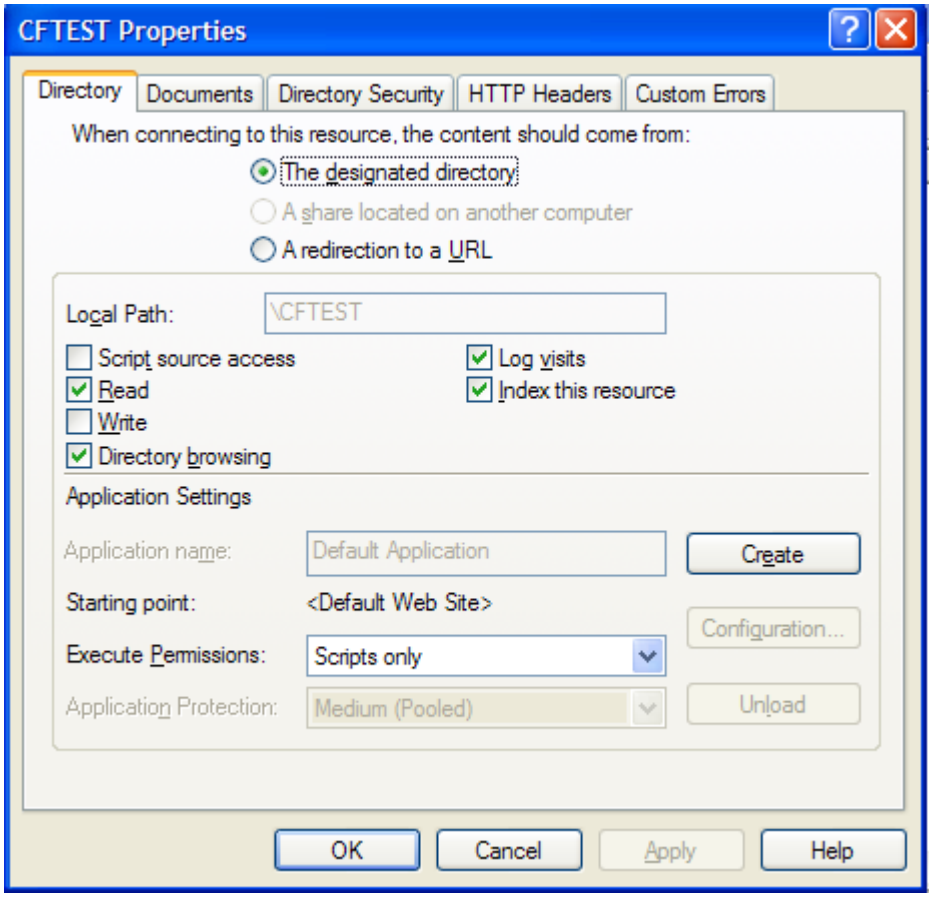


Figure 3. Configuring a Directory as an Application

Once you select the `Create` button, the `Application Name` field changes from `Default Application` to the name of the directory or virtual directory. Note that you can revert the directory to not being an application by selecting the `Remove` button that would appear in place of `Create` in the figure above.

As discussed in section 5.1.1, if you've installed BlueDragon with one of the first three installation options, then whenever you create a new web site, virtual directory, or configure a directory or virtual directory to be an application, as in this section, BlueDragon will enable a separate Admin console for that specific web site, virtual directory, or directory declared in IIS (as here) to be an application.

Also, by default in IIS, when you create a new virtual directory in the IIS admin console, it is declared to be an application by default (and so will have its own admin console).

If you would like to prevent a directory from having its own Admin console, you can always use the `Remove` option described above to "remove" the designation of that directory as a .NET application. Then it will no longer have its own Admin console. This is also discussed in section 5.1.3.

7 Other Configuration Issues

Following are discussions of various configuration issues related to deploying CFML on .NET.

7.1 Restarting .NET and .NET Web Applications

As discussed in previous sections, your CFML applications become native .NET applications, at least from the perspective of IIS and .NET.

It may be desirable to restart a given .NET web application, or the entire .NET Framework, such as after making certain kinds of coding changes or when trying to resolve a problem. Additionally, there are times when the .NET Framework itself may restart itself or a given web application. This section discusses both automatic and manual restarting of .NET and .NET web applications. (Technically, in .NET you stop—or, unload—the application. Then the first request for an ASP.NET or CFML page will restart—or, reload—the application.)

It's also important to know the implications of application restarts on your CFML and ASP.NET code, particularly regarding session variables, as discussed further in section 7.1.3.

7.1.1 Manually Restarting .NET Web Applications

There are several ways to manually restart a .NET web application.

7.1.1.1 Restarting All .NET Web Applications

If you prefer to stop/restart all .NET web applications at once, one option is to simply restart IIS. From the IIS interface, you can right-click on a computer name, choose `All Tasks`, then choose `Restart IIS`. (You can also simply restart one of the IIS-related services in the Windows `Services` panel, such as `World Wide Web Publishing`, which will restart IIS.)

Just be aware that if you want or need to restart just one particular .NET web application, there is an option for that, as discussed in the next section. Still, if you have only one .NET application on a site, restarting IIS may be more expedient.

Keep in mind that .NET has many automatic means by which it may restart a given web application (discussed later in section 7.1.2). For instance, if any change is made to the central `web.config` file, all .NET web applications on the server will be stopped (and restarted on the next first request).

7.1.1.2 Restarting a Single .NET Web Application

Rather than restart all of IIS, it is often desirable to restart just a given web application. IIS currently provides no means to stop/restart just one .NET web application. The option provided in IIS to "stop" a web site only affects the processing of IIS, and not the underlying .NET application(s).

The simplest way to manually cause restart of a single .NET web application is to run either a CFML or ASP.NET page that executes a particular method in the .NET system class which stops the web app. Here's an example of one way to call such a method as an ASPX page:

```
<%@ Page Language="c#"  %>

<% System.Web.HttpRuntime.UnloadAppDomain(); %>

Restarted web app <%=
System.Web.HttpRuntime.AppDomainAppVirtualPath %>

at <%= System.DateTime.Now.ToShortTimeString() %>
```

Save this code into a file, perhaps called `restart-webapp.aspx`, and call it whenever you want or need to restart the .NET web application. Note that in addition to unloading the .NET web application, the code also displays the path of the application being restarted (discussed in a moment) as well as the time of execution of this page.

Watch to make sure that the time shown indeed reflects the current time, to help you ensure that you're not seeing the cached output of a previous execution of the page from your browser. Simply refresh the page to see the current time.

The next request for a .NET page (CFML or ASPX, for instance) will restart the application (with the expected delay that occurs on the first request of any new .NET page, as explained in section 7.1.3).

Remember also that each web site, virtual directory, or directory declared in IIS to be an application is its own web application, as discussed in section 6.5, so it's important that you ***run this code in the docroot (or one of its subdirectories)*** of the intended web application. That's why the code also displays the path to the web application, to help you ensure you're restarting your intended application.

You could also execute the same .NET method using CFML:

```
<cfobject action="create" type=".NET"
class="System.Web.HttpRuntime" name="rt">

<cfset rt.UnloadAppDomain()>

<cfoutput>
Restarted web app #rt.get_AppDomainAppVirtualPath()# at
#timeformat(now())#
</cfoutput>
```

One problem with this approach of running the request as a CFML page, however, is that if the CFML runtime engine (BlueDragon) is not responding for any reason, such a `CFM` page may not run, where an `ASPX` page should always run.

Still another approach would be to leverage one of the many automatic means built into .NET for restarting a web application (discussed in section 7.1.2). For instance, if an application's `web.config` file is edited, that will restart the application.

7.1.2 Automatic Stopping/Restarting of .NET Web Applications

It's important to be aware that the .NET Framework itself will stop (unload) web applications automatically under various conditions. These can be very useful in preventing ongoing error situations, but their impact can be unexpected (such as the impact on sessions in section 7.1.3 or the speed to restart applications as in section 7.1.4), so it's important to know what these conditions are.

The first set of conditions are generally quite beneficial. The .NET framework has various built-in limiters, where if conditions are detected that may create instability in the .NET application, the framework will restart the application.

- If any of several .NET-specific resource limiter settings are exceeded, as set in the `<processModel>` element in the `machine.config`, a given application will be unloaded. These settings (including the percentage of memory used, the number of requests served, etc.) are inherited by all .NET applications. For more information, see section 8.3.2.

- On Windows 2003, when not using IIS5 isolation mode (which is not used by default), these `<processModel>` elements are ignored and instead the settings in `Application Pools` in IIS manager are used and set the limiters

The second set of conditions which can cause application restarts are generally more unexpected and not completely documented by Microsoft. You should be aware of these, as your actions may cause the application restart unexpectedly. Our experience so far has found that .NET will stop web applications (leaving them ready to restart on the next request) under the following conditions.

- If a directory within a given web application is **renamed or deleted, or a new one is created**, that application will be unloaded

- If **changes are made to files in the `bin` directory** of a given web app, or a subdirectory of that directory, that application will be unloaded

- If a single ASP.NET file (aspx, asmx, etc.) is edited and therefore recompiled more than 20 times since an application has been loaded, that application will be unloaded. The number is set in the xml element within `machine.config` named `numRecompilesBeforeApprestart`. This setting **does not apply** to CFML pages.

- If the `machine.config` file for the server is edited and saved (even if no change is made), all .NET applications for that server will be unloaded.

- If the `web.config`, or `global.asax` file in a given web application root directory is edited and saved (even if no change is made), that application will be unloaded

7.1.3 Implications on Sessions of Restarting .NET Web Applications

One of the most important implications of restarting web applications is that, assuming session variables are stored in memory (which is the default in .NET) and you are using .NET sessions for your CFML, when the web application restarts, all session variables will be lost.

As discussed in Section 4, it's possible to declare that a .NET web application should use an alternative form of persistence, including a database or state server. One benefit of those options is that when a .NET web application is restarted, the session variables are recovered, thereby minimizing the impact to end users of such application restarts.

If your CFML applications use session variables and your application is suffering frequent restarts for any of the manual or automated reasons explained previously in this section, you should consider using session variable persistence.

7.1.4 First Request Delay on Restart of .NET Web Applications

Another facet of the impact of restarting a .NET web application (whether manually or automatically) is a slight delay upon the first request for a page in a .NET web app. The delay occurs only for the first user making a request for any dynamic page (.aspx or .cfm files, for instance, not .htm or .gif files) after the restart. The delay may be up to a few seconds. This is not a BlueDragon issue, but a generic .NET one.

One solution, if your web applications are stopped on a recurring basis, would be to set up a scheduled task (using the Windows scheduler) that makes a request for any dynamic page. Perhaps it could be set to run first thing in the morning every day (if the server is restarted nightly, perhaps due to changes as described in section 7.1.2).

Another option may be to take advantage of .NET's ability (via the special `global.asax` file) to set up an application end event, so that whenever the web application is stopped, a request is made to start it again. Just be aware that you may have a reason some times for the web application to stop and not be immediately restarted.

7.2 Manually Configuring CFML Extension Mappings

You may want or have to manually configure the CMFL extension mappings in IIS, as discussed in the following sections.

7.2.1 "Manual Configuration" Installation Option

If you choose the `Manual Configuration` option in the BlueDragon.NET installer, you must then manually implement the extension mappings for CFML-based file extensions, including `CFM`, `CFC`, `CFCHART`, and `CFML`. You may also desire to manually configure these extension mappings even if you've used one of the other installation options (such as when resolving the problem discussed in Section 8.1.2.1).

In BlueDragon.NET, the mapping for all CFML extensions should point to the same executable as ASP.NET pages (like `ASPX` and `ASMX`), the `aspnet_isapi.dll`. In a .NET 2.0 installation, this will generally be:

```
C:\WINDOWS\Microsoft.NET\Framework\v2.0.50727\aspnet_isapi.dll
```

The exact path may vary on your installation. See the mapping for ASPX pages to find the precise executable path for your installation.

The extension mappings can be configured for the default web site, any given web site, a virtual directory, or a directory configured in IIS to be an application.

By right-clicking on any of them and selecting `Properties`, in the dialogue that opens select the option `Home Directory` (or `Home Directory`) tab and then choose the `Configuration` button on that tab. Finally, add extension mappings for the `cfc`, `cfm`, and `cfml` extensions (or edit them if already there) and configure them as follows:

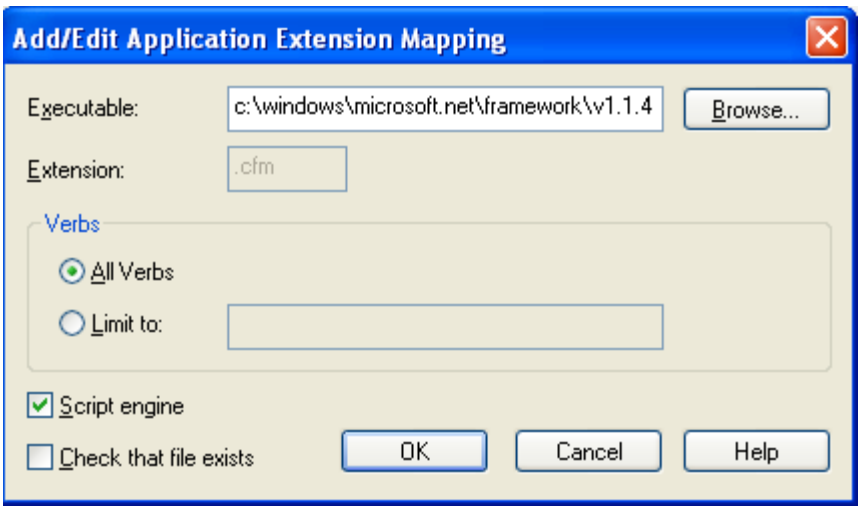


Figure 4: Extension Mappings for CFM filetypes

Place the full path to the `aspnet_isapi.dll` as discussed above. Please note that *it's critical that you do NOT enable the option on that dialogue labeled,* `Check that file exists`. Because the BlueDragon admin console pages do not really exist (see section 5.2.4), request for the admin console will fail if this option is checked.

Additionally, on the prior `Virtual Directory` (or `Home Directory`) page, also ensure that the `Application Settings` value, `Execute Permissions`, is set to either `Scripts Only` or `Scripts and Executables`.

7.2.1.1 New ASP.NET 2.0 Configuration Features

Note that after installing .NET 2.0, you will find a newly available tab labeled `ASP.NET`, in the properties dialogue for a given web site, virtual directory, or directory declared to be an application.

From that tab, you can more easily select which version of the `aspnet_isapi.dll` file to apply to all extensions currently configured to reference that file, using the available `ASP.NET Version` drop-down option. This is helpful also in preventing the mistake of having different

extensions in a given application pointing to different editions of the .NET framework, which can cause problems.

Additionally, if you select the 2.0 option (to configure files to be processed by .NET 2.0), another new option, the `Edit Configuration` button, is enabled on the `ASP.NET` tab. This option opens a useful visual editor for making `web.config` file changes. Even more powerful, it reflects any entries that are inherited from high-level `web.config` files or the global `machine.config`, by highlighting the entries in italics. This configuration editor option is disabled if you select .NET 1.1 for the `ASP.NET Version` drop-down on this tab.

7.2.2 XCopy Deployment

If you would like install and configure BlueDragon.NET and your CFML application on one machine, and then copy the code (and the BlueDragon engine) to another machine, you can do that with just a little effort. This is often called "xcopy-style" deployment.

Of course, in order to redeploy BlueDragon and your application on another machine, you must obtain a license for that additional deployment. Fortunately, New Atlanta has very compelling licensing terms for developers interested in redeploying BlueDragon and their CFML applications. Please contact us for details.

The manual configuration steps in the previous section are the key to this process. If you use the fourth (`Single Virtual Directory`) option of the installer, to install and configure an instance of BlueDragon into a single virtual directory, that directory will contain all the components needed to run your CFML application on any box that has the same edition of the .NET Framework and the Visual J# runtime which were implemented on the original box.

You can then copy that single virtual directory to another server (before or after making changes in the BlueDragon admin console).

The only manual step you will need to perform on the destination box is the configuration in IIS of the extension mappings for CFML files. The BlueDragon installer will have done that on the box where BlueDragon was installed, but you will need to make those changes on the destination box.

It's possible to automate the process of implementing those extension mappings, using any of several mechanisms for scripting the configuration of IIS. Examples of tools and documentation include the following:

Automating Administration for IIS 5.0

`http://technet.microsoft.com/en-us/library/bb727082.aspx`

IIS Programmatic Administration Reference

`http://msdn.microsoft.com/en-us/library/ms524713.aspx`

A Free Tool for Configuring .NET Web Applications

http://www.west-wind.com/Tools/WebSiteConfiguration.asp

As you contemplate the steps in this section, be aware that you cannot install BlueDragon more than once on a given machine. If you already have implemented any of the other installation options, you cannot run the installer again to use the fourth option to create a single virtual directory deployment. Instead, you must either uninstall BlueDragon or run the installer on a machine (or virtual machine) that does not yet have BlueDragon installed.

7.2.3 Hiding CFM Extensions

You may also choose to manually configure a different file extension to process CFML pages. You could, for instance, declare that `.xyz` files should be processed by BlueDragon as CFML. You would need to change both IIS extension mappings as described in section 7.2.1 and the HttpHandler settings described in 6.3.

The steps to do this (including for BlueDragon editions other than the .NET version) are discussed in a BlueDragon technote, “"Hiding" CFML behind an extension other than .cfm or .cfml”:

http://www.newatlanta.com/products/bluedragon/self_help/tech_notes/hiding_cfml.cfm

7.3 Sourceless Deployment

BlueDragon supports sourceless deployment (deploying your CFML applications without exposing your source code) through an option we call precompiling and optionally encrypting your CFML templates. This protects your code from being read. (The files are not converted into .NET classes or DLLs but instead remain CFM files, which when opened are unreadable, and no mechanism exists to revert them to source.) This feature is discussed in the *BlueDragon 7.1 User Guide*

While the BlueDragon admin console provides an option for precompiling templates, there is also an available command line utility. In BlueDragon.NET, the `precompile.exe` utility is located in the `precompiler` directory where BlueDragon is installed. There are important additional details offered in a `readme.txt` file located there.

7.3.1 Setting an Expiration Date on Your Templates, Such as for Trial Code

An extension of the precompiled code feature (from the last section), BlueDragon permits you to set an expiration date for your code, whether for a single template, directory, or an entire CFML application. With this feature, such code will stop working after a given date (reporting to the user an appropriate message).

Note that BlueDragon will continue to run, as this is an expiration date for just your code, so you can have some part of your application continue to run while some other portion stops on that date. If and when the user obtains the permission from you to use the code beyond that date, you simply provide new copies of the CFML code to be dropped into the appropriate directory of your application.

7.4 No Default Document Defined by BlueDragon.NET

The BlueDragon installer does not declare index.cfm or any other filenames in the IIS list of "default documents" (to serve up such a file if the URL from a browser request has no file name). If your code relies on that feature, please add that yourself using the `Documents` tab in the `Properties` dialogue for the web site, virtual directory, or directory configured in IIS to be an application.

7.5 Invoking CFX Custom Tags in .NET

BlueDragon.NET, like the other editions of BlueDragon, supports the use of CFX custom tags. Indeed, it's possible to create CFX tags using any .NET programming language, including J#, C# and Visual Basic.NET. It is not possible, however, to simply drop existing Java or C++ CFXs into the .NET Framework. This section discusses both compiling CFXs in native .NET languages and the challenges of supporting existing Java and C++ CFXs.

7.5.1 Compiling CFXs in Native .NET Languages

Where the source for a java CFX tag, for instance, would normally reference a CFX.jar file containing interfaces to be implemented, BlueDragon.NET implementations include a `bluedragon/CFX` directory (wherever the installation was made, as discussed in *Deploying CFML on ASP.NET and the Microsoft .NET Framework*), which includes a `CFX.NET.dll` file offering a .NET assembly serving the same purpose.

Whether coding in J#, C#, or VB.NET, simply add a reference to the `CFX.NET.dll` assembly to your Visual Studio .NET project and then compile the CFX tag. Note that you may compile multiple Java CFX tags into a single .NET assembly to deploy on BlueDragon.NET.

Assemblies that contain CFX tags must be placed in the `/bin` directory of the web site or virtual directory (or directory declared in IIS as an application) in which they're to be deployed, or in the Global Assembly Cache (see section 6.2). You must then configure the CFX tag(s) using the BlueDragon admin console.

7.5.2 Reusing Existing Java CFXs

It is not possible, however, to simply drop Java custom tags into a BlueDragon.NET deployment and expect to call them. They must be recompiled using J#.

Existing CFX tags implemented in Java can be easily implemented simply by recompiling them from source using the Visual J# compiler. (Visual J# is included with Visual Studio.NET.) The steps involved would be the same for newly written tags created in C# or VB.NET.

The `bluedragon/CFX` directory also includes two files, `BlueDragon.java` and `BlueDragon.dll`, as a sample Java CFX tag that has been recompiled using Visual J# for deployment on BlueDragon.NET.

8 Troubleshooting CFML Processing on .NET

When having trouble with execution of CFML pages in BlueDragon.NET, the following tips regarding the processing of CFML on the .NET framework may help. Additionally, see a further discussion of general CFML troubleshooting tips in the *BlueDragon 7.1 CFML Compatibility Guide.*

8.1 CFML Pages Do Not Run at All

When CFML pages do not run at all, the following may identify possible solutions.

8.1.1 File Not Found Errors

If you're trying to browse a CFML page or the BlueDragon Admin, and you get a BlueDragon `File Not Found` error (or an ASP.NET `resource cannot be found` or similar errors), you should confirm that you're using the correct URL for IIS to serve the page.

Perhaps the easiest way to avoid mistakes in making requests to CFML (or ASP.NET) pages is to use the "browse" feature of the IIS Admin interface. First, find your desired website, then the directory and filename to be browsed. Right-click on the filename and choose `Browse`. IIS will launch your browser using the appropriate URL needed to open that file in that given website/path.

If the path is something very different from what you expected, consider the information in sections 5.1.1 and9 8.2.

8.1.2 Page Returns Source Code or Does Not Run at All

If the URL is correct but CFML pages simply don't run, or return the source of the page, one of the first things to consider is making sure that the .NET Framework is properly configured for IIS and ASP.NET pages. Since CFML pages are processed in the same pipeline as ASP.NET pages (see section 2.1.1), if the latter don't work, the former won't either.

The simplest way to ensure that the .NET web application is properly configured and running is to run an a simple ASP.NET page, such as the following (name it `test.aspx` or similar and place it in the same directory as your intended CFML):

```
<%@ Page language="c#" %>
<% Response.Write("test"); %>
```

If this page fails to runs as expected, this is an indication that the problem is not with BlueDragon but instead with the .NET Framework or the configuration of IIS with the .NET Framework.

See section 2.1 for some common problems in Windows 2003 that may prevent ASP.NET (and therefore CFML) pages from running. Similarly, the following section explains a common problem that can make ASP.NET (and CFML) pages not run on IIS.

8.1.2.1 Problems Caused by IIS Being Installed After .NET

If neither ASPX nor CFML pages run, a common problem is when IIS itself is installed (or reinstalled) after .NET is installed (or reinstalled). The .NET installer normally configures IIS in

several ways to make it know how to process ASP.NET pages. If IIS is not installed when .NET is installed, these required changes are not made.

A simple way to determine if this is the problem is if you observe the extension mappings for your web site or directory. If you find that CFM file extensions are mapped to the aspnet_isap.dll (see sections 6.4 and 7.2.1) but there are no file extension mappings for ASP.NET pages (such as `aspx`, `asmx`, and `ascx` files), .NET was installed after IIS and these and other needed settings were not properly configured by the .NET installer.

The problem (and suggested solution, which involves running a .NET command line utility called, `aspnet_regiis.exe`) is discussed in the following Microsoft Tech Notes:

http://msdn.microsoft.com/en-us/library/k6h9cz8h(vs.71).aspx

After resolving this, and ensuring that an ASPX page runs (see Section 2.1.1), try running your CFML pages. Depending on your resolution to the problem, you may need to manually implement the mappings required for CFML pages (as discussed in section 7.2) or uninstall and reinstall BlueDragon and let its installer apply the needed changes.

8.1.3 CFML Pages Were Running But Have Stopped

If you have CFML pages that were running but they suddenly stop (fail to respond), the .NET Framework or the web application in particular may have become unstable and an unexpected error has arisen.

The most expedient solution may be to simply restart the .NET web application, as discussed in section 7.17.1. If this problem persists, please contact us for further assistance.

8.2 Admin Console Changes Are Not Taking Effect

If you've made a change in the BlueDragon admin console and it doesn't appear to be taking effect, the problem may be in your using the incorrect admin console. A common example of this is a "datasource could not be found" error.

Recall that BlueDragon.NET offers a separate BlueDragon admin console per web site or virtual directory or directory declared in IIS to be an application, as discussed in section 5.1.1. So if you define a datasource in one admin console (such as that for the web site), but you execute code in a virtual directory or a directory declared in IIS to be a web application, the datasource will not be found. You must ensure that you configure the appropriate Admin console for your CFML code.

The following CFML code will report the .NET web application context path and physical document root for pages processed in the directory where the code is executed:

```
<cfobject action="create" type=".net"
class="System.Web.HttpRuntime" name="rt">

<cfdump var="#rt.get_AppDomainAppVirtualPath()#"><br>
<cfdump var="#rt.get_AppDomainAppPath()#"><br>
```

You could use this information to find the appropriate admin console (by using the first value reported to help create the proper URL to request the admin console, as also discussed in 5.1.1).

If it seems burdensome to have to declare some setting in multiple admin consoles, recall that all web applications do inherit from a single, central, `bluedragon.xml` file, discussed in section 5.1.2.)

Finally, as explained in section 5.1.3, it's also possible to remove the indication in IIS of a given virtual directory being an application (and having its own Admin Console). The same applies to a directory declared to be an application.

8.3 Pages Are Not Performing As Expected

Our experience is that BlueDragon.NET will process CFML pages faster and more efficiently than ever before possible. Still, there are factors that can affect performance. The following sections should be considered when facing this challenge.

8.3.1 Beware of Unexpected Application Restarts

If your CFML applications on .NET seem to be performing poorly, it's worth considering that one explanation may be the (often unexpected) behavior that .NET offers to restart web applications automatically under certain conditions. As explained in section 7.1.2, there are several circumstances (some surprising) where a .NET web application may unload. For example, simply creating or renaming directories in a .NET application directory can cause the application to unload.

As explained further in section 7.1.4, after .NET unloads a web application, the first request for the first CFML (or ASPX) page after the application unloads will experience a delay of up to a few seconds. We have seen instances where unexpected circumstances were causing a web application to be unloaded very often, thus making all or intermittent CFML page processing to be slow. To help identify if this is happening, see the following BlueDragon FAQ:

> *How can I determine if my .NET web application is restarting too often?*
>
> `http://www.newatlanta.com/c/products/bluedragon/self_help/faq/detail?faqId=285`

8.3.2 .NET Framework Workload Processing Defaults

When application pages fail or the application performs poorly, it may be that the .NET Framework's built-in processing model and default settings may be throttling or protecting the environment in unexpected ways.

There are built-in settings that control how many pages can be requested before being queued, how much memory can be used by the application, how long pages can run before being timed out, and more. These settings are controlled by XML entries in the `machine.config` file or may be set in your web application's `web.config` file (see section 6.3).

In particular, the default value for the `httpRuntime` section's `executionTimeout` and `appRequestQueueLimit` values may not be set appropriately for your application or environment.

Similarly, the `<processModel>` element in the `machine.config` (also discussed briefly in section 7.1.2) controls various settings that can impact your performance if not configured suitably for your environment.

For more information on these settings, see the Microsoft Framework documentation, as well as the following:

Developing High-Performance ASP.NET Applications

http://msdn.microsoft.com/en-us/library/5dws599a(vs.71).aspx

Improving .NET Application Performance and Scalability

http://www.microsoft.com/downloads/details.aspx?familyid=8A2E454D-F30E-4E72-B531-75384A0F1C47&displaylang=en

10 Tips for Writing High-Performance Web Applications

http://msdn.microsoft.com/en-us/magazine/cc163854.aspx

HOW TO: Tune and Scale Performance of Applications That Are Built on the .NET Framework

http://support.microsoft.com/kb/818015

8.3.3 Using Microsoft Performance Monitor

Since BlueDragon.NET processes your CFML pages just like any other ASP.NET page, you can also take advantage of the built-in performance monitoring and reporting services offered by Microsoft.

Many developers may be familiar with the Microsoft Performance Monitor tool (available using `Start>Control Panel>Administrative Tools>Performance`). A useful introduction to the tool, often referred to as Perfmon, as well as some general information on tuning IIS is at:

http://technet.microsoft.com/en-us/library/bb727100.aspx

8.3.3.1 .NET-Specific Perfmon Counters (for CFML, Also)

Besides the typical performance counters and categories (or "performance objects") with which many may be familiar, there are several special counters and categories for ASP.NET, and these apply to CFML pages running under BlueDragon as well.

In particular, look into the ASP.NET there is a category ("performance object") named `ASP.NET Apps v2.0.50727` with a root instance and, if you have other web site, virtual directories, or directories declared in IIS to be an application, an instance for each of those having templates

that have been run since startup of the current instance of the .NET framework. There are nearly 50 counters produced that can give very compelling information.

There is another category called `ASP.NET v2.0.50727` and it tracks still other details about running applications. In.NET 2.0, the number and value of these Perfmon counters has increased considerably.

8.3.3.2 Using Perfmon to View, Log, Trace, and Alert About Performance

Perfmon is very flexible. It can be used to viewing these counters graphically on screen in real time (at an interval of collection you can set). There's also an option to show them in a text-based "Report" form as well as in a histogram format.

Beyond that, it can also write log files (writing either all or some counters associated with a given object), and it can do that on a scheduled basis. The log files can be binary, csv, or even SQL Server-compatible files.

It also offers a "trace log" feature, to track when events fire, and "asp.net" is offered as one of the "non-system providers" when using the interface to set these up.

Finally, and perhaps most powerfully, it offers an "alert" mechanism that can track when any of these counters above (for any given instance, where applicable) exceeds (or falls below) some limit (again, monitored at an interval you set). If the alert is triggered, it can take an action including logging an entry in the windows application log, sending a network message to someone or some process, start creating a perfmon data log, or run some programs.) And, again, these alerts can be scheduled to only be tracked at certain times.

8.3.3.3 Other .NET Performance Monitoring Resources

The following additional resources address use of Perfmon and other tools with .NET to monitor and manage performance and server uptime:

ASP.NET Performance Monitoring, and When to Alert Administrators

`http://msdn.microsoft.com/en-us/library/ms972959.aspx`

A Shareware Tool to Monitor/Detect Web App Uptime Status

`http://www.west-wind.com/webmonitor/`

Watching Your Server Processes

`http://msdn.microsoft.com/en-us/library/aa479014.aspx`

8.3.4 Contacting New Atlanta for Any Other Performance Challenges

New Atlanta expects your execution of CFML applications on BlueDragon to always be faster than any previous experience you may have had with other CFML servers. As such, if you experience any serious degradation in performance, we want to know about it. See the technical sup-

port discussion in section 1.5 for contact information. We want to hear from you in order to evaluate and attempt to resolve your challenge.

8.4 .NET Security Issues that May Affect CFML Processing

The .NET Framework has implemented tighter security mechanisms to avoid common problems in web application development. Some more global settings were discussed in section 2.1.2. There are also several more localized security mechanisms that are specific to .NET. As is often the case, the tighter security can also be a hindrance if you do not expect and understand it. The following sections describe some pertinent .NET security features.

8.4.1 Problems Processing CFDIRECTORY, CFFILE Actions

There can be challenges using certain CFML tags such as `CFDIRECTORY` and `CFFILE`, which can be used to create or modify directories and files on the server. By default, the user under which ASP.NET runs has quite limited permissions. This is a security precaution. It isn't even authorized to create or modify directories within the web docroot.

If a directory is not modified to specifically permit read access to the user under which ASP.NET runs, an attempt to use `CFFILE action="read"` will give the CFML Runtime error, `File Specified No Longer Exists`, not a .NET error; and if it's not modified to permit the `List Folder Contents` access, then an attempt to use `CFDIRECTORY ACTION="list"` will get `Error Getting Directory List`

In order to enable tags that do perform such actions, you must grant authority to the account under which ASP.NET is running. The default on Windows 2000 and Windows XP is a user called `ASPNET`. On Windows 2003, the account is `NETWORK SERVICE`.

The process of granting authority for a given file or directory may vary depending on the specific version of Windows that you're running. In Windows XP, for instance, you may need to perform a preliminary step in order to even control the security for a given directory. By default there is no visible means to modify the security settings for a file or directory. You must use Windows Explorer, to choose its `Tools>Folder Options>View>Advanced Settings` in order to uncheck the option `Use Simple File Sharing`.

Having enabled that option, you will then see a `Security` tab when you select the properties for a file or directory (right-click it and choose `Properties`). To add new permissions, click the available `Add` button, then `Advanced`, then `Find Now`. Find and select the appropriate user (`ASPNET` or `NETWORK SERVICE`, as discussed above), then select `OK`, then `OK` again. Finally, with that user selected, choose the appropriate options (`Modify, Read, Full Control`) as you deem appropriate for the action desired.

8.4.1.1 Creation of Fusebox Parsed Files May Fail

Those executing a Fusebox 4 application may experience an error for this same reason, where the attempt to write a "parsed" file for a given request (as generated by the Fusebox framework) may fail. The error may say:

```
An Error during write of Parsed File or Parsing Directory not
found.
```

Again, the solution is to grant permissions, as discussed in section 8.4.1, to allow .NET to write to the `parsed` directory for the Fusebox application.

8.4.2 Problems Processing Access Databases

For similar security reasons, when trying to update an Access database using BlueDragon.NET, you may receive the error: `Operation must use an updateable query`. This is not caused by BlueDragon but instead the .NET framework. Indeed, the problem is discussed in the Microsoft Knowledge Base article:

`http://support.microsoft.com/default.aspx?scid=kb;en-us;316675`

The issue has to do with security and the limited controls of the ASP.NET default user. The simplest solution may be to edit the security properties for the MDB file (using Windows Explorer, right-click on the MDB file, choose properties, then the `security` tab). Add `everyone` as a user (choose `Add`, then `Advanced`, then `Find Now`, and select `Everyone`), and give that user `Modify` and `Write` permissions.

If you have opened the file in a currently running instance of BlueDragon or ColdFusion (or Access) before making that change, you'll see that the directory where the MDB is stored will now have an LDB file of the same name. In this case, the change you've made won't take effect until you restart whatever app(s) had opened the file (which will release this LDB lock file and make it disappear). In the case of BlueDragon.NET, see section 7.1 for information on restarting .NET web applications.

Once the file is gone, the change to security will take effect and the next refresh of the page doing the database update should work as expected.

8.4.3 .NET Request Identity

In any web application, knowing the account under which processing take place is often vital in order to understand permissions and some feature capabilities related to that.

The following ASP.NET code can be used to determine which user ASP.NET requests are running under:

```
<%@ Page Language="c#" %>
<%   Response.Write("User: " +
System.Security.Principal.WindowsIdentity.GetCurrent().Name);  %>
```

There is also a notion of setting or impersonating request identity during page processing, which can be important to understand in resolving permissions problems. The account is determined by the following algorithm:

1. If web.config contains an `<identity>` element with the `impersonate` attribute set to `true` then BlueDragon.NET will run under the `username` specified in the `<identity>` element. If an empty string is specified for the `username` then BlueDragon.NET will run

under the authenticated user for authenticated requests and under the anonymous user for unauthenticated requests.

2. If web.config doesn't contain an `<identity>` element with the attribute `impersonate` set to true but the `machine.config` file does, then BlueDragon.NET will run under the `username` specified in the `<identity>` element. If an empty string is specified for the `username` then BlueDragon.NET will run under the authenticated user for authenticated requests and under the anonymous user for unauthenticated requests.

3. If impersonation is disabled then:

   - with IIS 5 and earlier, BlueDragon.NET will run under the user specified in the `<processModel>` element of `machine.config`. The `<processModel>` element cannot appear in `web.config`.

   - with IIS 6, BlueDragon.NET will run under the application pool identity of the application pool it is configured to run under.

8.5 Other Challenges and Concerns

Following are some other challenges you may face when working with BlueDragon.NET.

8.5.1 Work Directories Don’t Exist As Expected

If you use one of the first three installation options, BlueDragon will create work directories for each web site, virtual directory, or directory declared in IIS to be an application, as discussed in section 5.2.1. However, as explained there, many of these directories are not created until a first request is made for a CFML page in the given web application.

8.5.2 Debugging Errors When Including Between CFML and ASP.NET

When including CFML pages from .NET (and vice-versa), if there's an error, it may be helpful to try running the included page directly (rather than by way of the calling program). Errors may not be propagated effectively across the page boundaries.

8.5.3 Frequently Asked Questions

You may have other problems or questions that may not be documented here. The BlueDragon section of the New Atlanta web site has a FAQ (frequently asked questions) area, which is searchable. Try searching that just for the phrase `.net` to find other issues related to .NET (you can also try to search for something specific, but if you don’t find it, consider just using the simpler phrase.

9 Additional Useful Resources

Following are some additional resources that may prove helpful while working with the .NET Framework using ASP.NET, IIS, and BlueDragon.

ASP.NET Configuration

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpconaspnetconfiguration.asp

ASP.NET Performance Monitoring, and When to Alert Administrators

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnaspp/html/monitor_perf.asp

Developing High-Performance ASP.NET Applications

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cpguide/html/cpcondevelopinghigh-performanceaspnetapplications.asp

Improving .NET Application Performance and Scalability

http://www.microsoft.com/downloads/details.aspx?familyid=8A2E454D-F30E-4E72-B531-75384A0F1C47&displaylang=en

10 Tips for Writing High-Performance Web Applications

http://msdn.microsoft.com/msdnmag/issues/05/01/ASPNETPerformance/default.aspx

HOW TO: Tune and Scale Performance of Applications That Are Built on the .NET Framework

http://support.microsoft.com/kb/818015

IIS Programmatic Administration Reference

http://msdn.microsoft.com/library/default.asp?url=/library/en-us/iissdk/html/333bb7c7-379b-4173-ac6b-1dad75e37271.asp

A Free Tool for Configuring .NET Web Applications

http://www.west-wind.com/Tools/WebSiteConfiguration.asp

A Shareware Tool to Monitor/Detect Web App Uptime Status

http://www.west-wind.com/webmonitor/

Watching Your Server Processes

http://msdn.microsoft.com/asp.net/archive/default.aspx?pull=/library/en-us/dnaspp/html/aspnet-watchserverprocesses.asp